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TYPHUS FEVER

TRANSMISSION OF ENDEMIC TYPHUS BY RUBBING EITHER CRUSHED INFECTED FLEAS OR INFECTED FLEA FECES INTO WOUNDS

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Following the isolation of the virus of endemic typhus from rat fleas secured from a typhus focus in Baltimore, in November, 1930 (1), investigations were inaugurated to determine the method by which the flea (*Xenopsylla cheopis*) might transmit endemic typhus from rat to rat and from rat to man.

In our investigation on the possible mechanism by which the flea could transmit the infection it was found that fleas (*Xenopsylla cheopis*) were readily infected with the virus of endemic typhus by allowing them to feed on infected white rats. Further, it was found that these fleas were able to transmit endemic typhus from rat to rat under conditions similar to those occurring in nature (2) (3) (4). This work was, in part, confirmed by Castaneda (5), working independently, who was able to show that fleas (*Xenopsylla cheopis* and *Ctenocephalus canis*) could be infected with Mexican typhus by allowing them to feed on infected rats. It was later determined by us that endemic typhus could be transmitted to guinea pigs by rubbing crushed infected fleas into wounds made by scratching and that the virus was present in the feces of infected fleas (6). These facts apparently warranted the assumption that a probable mechanism by which endemic typhus may be transmitted is through the rubbing of infected flea feces into wounds made by the biting of fleas or by scratching. Recently we reported that fleas infected with endemic typhus retained the infection for at least 36 days (6). We are now able to report that this period can be lengthened to at least 52 days. Since a rat infected with typhus presumably remains infectious for arthropods for only a relatively short time and the fleas apparently retain their infection throughout life, the importance of the flea in perpetuating the virus in nature is apparent. The period of gestation in the rat being between three and four weeks (7), ample opportunity

is afforded infected fleas for the transmission of endemic typhus virus to a succeeding generation of rats, from which other fleas may, in their turn, receive infection.

The experimental data bearing on the transmission of endemic typhus by the rubbing of crushed infected fleas (*Xenopsylla cheopis*) and on the transmission by rubbing feces of infected fleas into skin abrasions are reported in this paper.

TRANSMISSION BY CRUSHED WHOLE FLEAS

Fleas which had been fed on rats infected with endemic typhus virus were crushed in a mortar. This material was rubbed on the shaved belly of two guinea pigs. A stiff wire, sharpened at one end, was then used to make scratches in the skin where the crushed fleas had been deposited. Collars were fitted to the guinea pigs to prevent their licking off the material from the crushed fleas. One of the guinea pigs so treated developed an indefinite febrile reaction, while the second developed a febrile reaction after an incubation period of nine days. No evidence of scrotal involvement occurred in either guinea pig. Assuming that typhus transmitted through abrasions might give an atypical type of infection, these guinea pigs were sacrificed on the eleventh day after the application of crushed fleas. The spleens and brains from these guinea pigs were then emulsified separately and separately injected, intraperitoneally, into fresh guinea pigs, two animals receiving the material from each organ. Typical clinical endemic typhus developed in five of the eight guinea pigs so inoculated. This strain of virus was established as endemic typhus by a further study in guinea pigs and rabbits. With few exceptions, blood cultures made at the time of transfer of virus from infected guinea pigs to fresh animals were negative. Typical clinical endemic typhus developed in the majority of the guinea pigs used. Rickettsiae were found readily in smears made from the tunica vaginalis of infected guinea pigs. The characteristic histologic lesions of typhus were found in three of the four brains from guinea pigs infected with this strain of virus. Two rabbits injected with the virus developed agglutinins for *B. proteus* X_{19} (type O) in dilutions of 1:80, while the serum of a third rabbit showed a titer of 1:640. A definite cross immunity was found between this strain of virus and known strains of endemic typhus virus.

TRANSMISSION BY FECES OF INFECTED FLEAS

Two guinea pigs were fitted with collars to prevent their reaching the abdomen with their mouths. Feces from fleas infected with endemic typhus were collected by imprisoning the fleas in a test tube overnight. The feces were then rubbed and scratched into the shaved abdomens of the two guinea pigs. One of these guinea pigs developed an indefinite febrile reaction, while the temperature of the second

remained normal for 13 days. Neither guinea pig showed any scrotal involvement at the end of 13 days. These two guinea pigs were sacrificed and their brains and spleens used to inoculate fresh guinea pigs.

Of the eight guinea pigs inoculated with this material, five developed the febrile reaction and scrotal lesions typical of endemic typhus, and the strain was established by transfer of blood and testicular washings to other guinea pigs. Rickettsiae have been found readily in smears made from the tunica vaginalis from guinea pigs inoculated with this strain of virus. Brains from two guinea pigs infected with this strain of virus were examined histologically. The characteristic lesions of typhus were found in one of these. In rabbits, this virus produces agglutinins for *B. proteus* X_{19}. Guinea pigs immune to typhus are immune to this virus.

SUMMARY

Fleas (*Xenopsylla cheopis*) infected with endemic typhus by feeding on infected rats were crushed and rubbed into scratches on the skin of guinea pigs. These guinea pigs showed an indefinite febrile reaction but no scrotal lesions. The virus of endemic typhus was recovered from them.

Feces of infected fleas scratched into the skin of guinea pigs transmitted endemic typhus. In this instance these guinea pigs suffered atypical infections (signs of infection being absent in one), but the virus of the disease was recovered readily from their brains and spleens.

CONCLUSION

The foregoing work adds additional weight to the suggestion previously made (6) that a probable mechanism by which endemic typhus may be transmitted is through the rubbing of infected flea feces into wounds made by the biting of the flea or by scratching.

ACKNOWLEDGMENT

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REFERENCES

(1) Dyer, R. E., Rumreich, A., and Badger, L. F.: Pub. Health Rep., **46**:334: (Feb. 13), 1931.

(2) Dyer, R. E., Ceder, E. T., Rumreich, A., and Badger, L. F.: Pub. Health Rep., **46**:1869 (Aug. 7), 1931.

(3) Dyer, R. E., Ceder, E. T., Rumreich, A., and Badger, L. F.: Pub. Health Rep., **46**:2415 (Oct. 9), 1931.

(4) Dyer, R. E., Ceder, E. T., Lillie, R. D., Rumreich, A., and Badger, L. F.: Pub. Health Rep., **46**:2481 (Oct. 16), 1931.

(5) Castaneda, M. R.: Medicina, **11**:695 (Aug. 10), 1931.

(6) Ceder, E. T., Dyer, R. E., Rumreich, A., and Badger, L. F.: Pub. Health Rep., **46**:3103 (Dec. 25), 1931.

(7) Miller, N.: American Naturalist, **45**:623 (Oct.), 1911.

SICKNESS AMONG MALE INDUSTRIAL EMPLOYEES IN THE THIRD QUARTER OF 1931

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The frequency of sickness causing disability for more than one week was 2 per cent lower in the third quarter of 1931 than in the same quarter of 1930, and 15 per cent below the incidence rate for the corresponding period of 1929. The frequency of nonindustrial injuries, however, was somewhat higher during the recent quarter-year than in the same period of either of the two preceding years, presumably on account of the longer time to which men are exposed to accidents outside the factory, as they spend fewer hours in it.

For respiratory diseases as a group the decrease was 8 per cent from the 1930 to the 1931 period, and 25 per cent from 1929 to 1930. Yet each of the three periods under review is regarded as epidemic-free.

Among the respiratory diseases, pneumonia (all forms) exhibited the most spectacular decrease, the rate for the third quarter of 1931 being less than half of what it was in the same period of 1929. Influenza was reported at a slightly lower rate during the recent quarter than in the third quarter of 1930, but at a much lower rate than in the corresponding quarter of 1929. Bronchitis, tonsillitis, and other diseases of the pharynx and tonsils show a decrease in frequency of about 10 per cent from the 1930 to the 1931 period and approximately 20 per cent from the 1929 to the 1930 quarter-year under consideration. The rate of new cases of respiratory tuberculosis appears to be about the same as in 1930, but lower than in 1929.

Nonrespiratory diseases as a whole occurred at virtually the same rate in the third quarter of 1931 as in the third quarter of 1930. The latter rate, however, was 7 per cent below that of the third quarter of 1929.

In the nonrespiratory group, certain disease categories have shown consistent improvement up to the end of the third quarter in 1931 over the corresponding rates in 1930 and 1929. These diseases or disease groups are appendicitis, diseases of the skin, rheumatism, and "other digestive diseases," which include, principally, diseases of the mouth and annexa, the intestines, and the liver. For diseases of the stomach, and diarrhea and enteritis (considered as one group), the rates exhibit evidence of a declining trend, but the improvement has not been as consistent as in the other disease groups mentioned.

In addition to nonindustrial injuries, at least two disease groups appear to be resisting the declining trend of sickness. In each of the last two quarters [1] the incidence rate of neurasthenia, and of "other

[1] *Cf.* Sickness among male industrial employees in the second quarter of 1931. Pub. Health Rep., vol. 46, No. 42, Oct. 16, 1931.

genito-urinary diseases" has been slightly higher than during the corresponding periods of the two preceding years. In 1921, when economic conditions were similar to those prevailing now, especially as regards the insecurity of jobs, the neurasthenia rate ascended. The present frequency of this type of illness, however, may not be significantly above the 1929 incidence. The genito-urinary diseases, which have failed to decline in conformance with the general run of diseases, were found, upon special analysis of this category, to be diseases of the kidneys and annexa (except nephritis) and diseases of the bladder.

The statistics presented are based on reports to the Public Health Service of cases of sickness and nonindustrial injury causing disability for more than one week and which were compensated by cash benefits from the funds of industrial sick-benefit associations or company relief departments. The rates in 1930 and 1931 are based on reports from the same establishments, 26 in all, while the 1929 rates cover 23 of these 26 establishments. The average number of men included in the record was approximately 149,000 in 1931, 160,000 in 1930, and 164,000 in 1929.

The record covers, in the main, men who are employed, but involves those working on a part-time basis. Some unemployed men evidently are included, because the by-laws of about one-third of the reporting associations contributing one-seventh of the population under consideration state that membership may be retained during furlough or lay-off if dues are paid. In one other association membership may be retained up to the ninetieth day of furlough, and in another association up to the one hundred and eightieth day. But in 60 per cent of the reporting associations, involving 83 per cent of the number of men under consideration, membership is terminated within three weeks of the date of lay-off.

The frequency of disabling attacks of sickness lasting eight days or longer may not actually have decreased quite as much as the accompanying table indicates. The factor of selection of personnel during the last two years may have changed somewhat the character of the population under consideration. For example, the group laid off may have contained a larger proportion of potential sickness risks than the group which remained on the pay roll. However, the kinds of sickness showing the sharpest decreases in frequency indicate that factors other than mere "selection" have contributed to the indicated decline in the incidence of illness.

TABLE 1.—*Frequency of disability lasting 8 calendar days or longer in the third quarter of 1931 compared with the same quarter of 1930 and 1929*

Male morbidity experience of 26 industrial establishments which reported their cases to the United States Public Health Service during all three years [1]

Diseases and disease groups which caused disability [Numbers in parentheses are disease title numbers from the International List of Causes of Death, third revision, Paris, 1920]	Annual number of disabilities per 1,000 men in third quarter of—		
	1931	1930	1929
Sickness and nonindustrial injuries [2]	78.2	78.0	88.8
Nonindustrial injuries	14.3	12.5	13.6
Sickness [2]	63.9	65.5	75.2
Respiratory diseases	16.5	18.0	24.0
Influenza and grippe (11)	4.1	4.4	6.7
Bronchitis, acute and chronic (99)	2.5	2.8	3.6
Pneumonia, all forms (100, 101)	.7	1.2	1.5
Diseases of the pharynx and tonsils (109)	4.3	4.8	6.0
Tuberculosis of the respiratory system (31)	1.0	.9	1.3
Other respiratory diseases (97, 98, 102–107)	3.9	3.9	4.9
Nonrespiratory diseases	47.4	47.5	51.2
Diseases of the stomach—cancer excepted (111, 112)	4.8	4.8	4.7
Diarrhea and enteritis (114)	2.0	1.9	2.3
Appendicitis (117)	3.5	3.7	4.8
Hernia (118a)	1.7	1.5	1.8
Other digestive diseases (108, 110, 113, 116, 118b–127)	2.8	2.9	3.7
Rheumatic group, total	9.9	10.0	10.3
Rheumatism, acute and chronic (51, 52)	4.1	4.5	4.6
Diseases of the organs of locomotion (158)	3.5	3.1	3.5
Neuralgia, neuritis, sciatica (82)	2.3	2.4	2.2
Neurasthenia (part of 84)	1.5	1.2	1.4
Other diseases of the nervous system (70–81, 83, part of 84)	.9	1.2	1.3
Diseases of the heart and arteries, and nephritis (87–92, 96, 128, 129)	2.7	2.8	3.5
Other genito-urinary diseases (130–136)	2.6	2.3	2.1
Diseases of the skin (151–154)	3.7	4.4	4.6
Epidemic and endemic diseases except influenza (1–10, 12–25)	1.3	1.4	1.2
Ill-defined and unknown causes (205)	2.6	2.3	1.9
All other diseases [2] (26–30, 32–37, 41–50, 53–69, 85, 86, 93–95, 155–157, 159, 164)	7.4	7.1	7.6
Average number of males covered in the record	148,724	160,115	163,851

[1] Except that the rates for 1929 cover 23 of the 26 establishments included in 1930 and 1931.
[2] Exclusive of disability from the venereal diseases.

STUDIES IN ASPHYXIA

II. BLOOD CHEMISTRY CHANGES RESULTING FROM COMPARATIVELY RAPID ASPHYXIA BY ATMOSPHERES DEFICIENT IN OXYGEN [1]

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INTRODUCTION

This report is the second of a series which describes the results of an investigation of the pathological and blood chemistry changes attending partial or complete asphyxia of dogs by carbon monoxide or by atmospheres deficient in oxygen. This study has been conducted for the purpose of obtaining fundamental information on the

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response of the organism to asphyxial environment, with the particular viewpoint of devising a procedure for treating moribund cases of carbon monoxide poisoning which do not respond satisfactorily to present methods.

The first report[5] described the neuropathology accompanying fatal carbon monoxide asphyxia produced by conditions which caused death in a comparatively short time, such as 20 to 30 minutes.

The present report deals with the blood chemistry changes in dogs asphyxiated by exposure to atmospheres deficient in oxygen which caused death in less than 30 minutes. This study was made not only to ascertain the changes attending asphyxia by insufficient atmospheric oxygen but also as a parallel to a similar study of the changes attending asphyxia by carbon monoxide, in order to ascertain whether there were changes which were peculiar to each type of asphyxia or whether they were identical and due entirely to anoxemia.

SCOPE OF WORK

The scope of the work described in this report is a study of the blood chemistry changes produced in dogs by exposure to atmospheres deficient in oxygen. Only the acute effects as produced by atmospheres which caused death in 30 minutes or less were studied.

TEST APPARATUS

The apparatus shown in Figure 1 was used in making the exposures. The two Venturi-type flow meters *a* and *b*, with their respective pressure regulators *x* and *y*, were designed to deliver an atmosphere, the

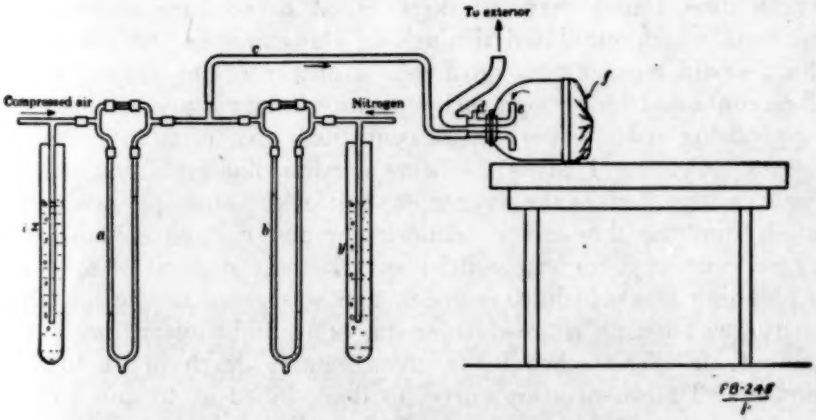

FIGURE 1.—Apparatus for exposing dogs to atmospheres deficient in oxygen

oxygen content of which could be varied from no oxygen to that of normal air, while the rate of flow was maintained at 16 liters per

[5] Chornyak, John, and Sayers, R. R.: Studies in asphyxia: I. Neuropathology resulting from comparatively rapid carbon monoxide asphyxia. Pub. Health Rep., vol. 46, No. 26, June 26, 1931. (Reprint No. 1488.)

minute. Air was passed through flow meter *a* and nitrogen through flow meter *b*, the effluent gases from each being led by tube *c* to an exposure mask. The mask consisted of a 14-liter bell jar the large opening of which was closed with a collarlike diaphragm *f* of rubberized cloth. The opening in the diaphragm was gathered with a hem containing elastic around the edge. This fit the neck of the animal snugly forming an almost air-tight seal. The small end of the bell jar was fitted with a 2-hole rubber stopper equipped with glass tubes which permitted the gas to enter and escape from the mask. The exit *e* was provided with a small side tube *d* which permitted sampling the escaping gas.

METHOD OF ANALYSIS OF ATMOSPHERES

The composition of the atmosphere was regulated by means of the flow meters *a* and *b* in accordance with a calibration for each. Frequent analysis of the atmosphere from the mask was made by the Haldane volumetric method.[6] These verified the values computed from flow-meter calibrations.

TEST PROCEDURE

With normal air flowing through the mask the animal was secured to a holding board and its head placed in the mask. The oxygen content of the atmosphere in the mask was then diminished by manipulation of the pressure regulators. The concentration of oxygen was rapidly decreased at first and then decreased at a progressively slower rate, the procedure being that which was calculated from the oxygen dissociation curve of dogs' blood to produce a degree of anoxemia which simulated throughout the exposure the conditions which would result from continuous exposure of the animal to air which contained 0.6 per cent carbon monoxide by volume. Table 1 is a typical log of the experimental conditions used in making the exposures. Column 1 gives the time a particular condition was in effect; column 2 gives the oxygen content of the atmosphere as computed from the flow-meter calibrations; and column 3 shows the oxygen content as determined by the Haldane method of analysis. In planning this schedule, consideration was given to the fact that the oxygen tensions in the alveolar spaces would be lower than in the inspired air. The schedule as given caused death in 11 to 28.5 minutes. The dissociation curve for dogs' blood at 40 mm. partial pressure carbon dioxide and varying partial pressures of oxygen was found to be very similar to that found by Haldane[7] for human blood,

[6] Burrell, G. A., and Seibert, F. M.: Sampling and examination of mine gases and natural gas. Bulletin 197 (1926), 108 pp. (Revised by G. W. Jones.)

[7] Douglas, C. G., Haldane, J. S., and Haldane, J. B. S.: The laws of combination of hemoglobin with carbon monoxide and oxygen. Jour. of Physiology, 44: (1912) 275-304.

though the saturation values for the dog blood were slightly higher. More data would be necessary definitely to establish this point, but for the purpose of the experiments at hand the data obtained were satisfactory for controlling the experimental conditions to give the desired degree of asphyxia.

TABLE 1.—*Experimental conditions*

Duration		Oxygen content of atmosphere	
		From flow-meter calibration	By analysis
Min.	*Sec.*	*Per cent*	*Per cent*
0	25	8	----------
0	50	5.4	----------
1	20	4.1	----------
2	10	3.4	----------
3	15	2.9	----------
4	50	2.5	2.97
7	0	2.2	----------
10	25	2.2	2.33
13	30	1.97	----------
15	30	1.97	2.26

As will be discussed later, the saturation of the blood with oxygen was always determined by blood-gas methods at the beginning of each experiment and again just prior to death; also, at an intermediate period in two experiments.

A constant flow of 16 liters per minute of the test atmosphere was maintained through the mask. This was found to be adequate for respiration requirements, as shown by the fact that the oxygen content of the effluent gas agreed closely with the computed values and the carbon dioxide content was usually about 0.5 per cent and was always below 1 per cent.

METHOD OF TAKING BLOOD SAMPLES

The blood samples were obtained from either the femoral vein or artery by means of a syringe and transferred to tubes containing potassium oxalate, or lithium oxalate when the determinations included uric acid. Arterial blood was used for hydrogen ion and blood gases, and venous blood for the other determinations. The sample used to determine the hydrogen ion concentration and blood gases was taken under neutral mineral oil and transferred to a Pyrex tube containing oil, so that the blood was at no time exposed to the air. A normal sample was taken just before the exposure was started and a second sample was obtained just prior to death, except in a few instances when an intermediate sample was also obtained. The amount of the blood taken for each sample was 25 c. c.

METHODS OF ANALYSIS

The blood samples were examined for the hydrogen ion concentration, blood gases (oxygen and carbon dioxide), carbon dioxide capacity of the plasma, sugar, uric acid, urea, nonprotein nitrogen, total and preformed creatinine, and inorganic phosphorus. Blood counts (including hemoglobin), red blood cells, white blood cells, and differential counts were also made.

The Folin-Wu method[8] of preparing the protein-free filtrate was followed. The filtrate was used to determine sugar, uric acid, urea, nonprotein nitrogen, total and preformed creatinine. With the exception of uric acid, which was determined by Benedict's method,[9] the substances were determined according to the methods given by Folin.[10]

The hydrogen ion concentration of the blood was determined electrometrically by use of a saturated calomel cell, a hydrogen electrode, and a Leeds and Northrup type K potentiometer with a sensitive galvanometer. The electrode was a modification of Hildebrand's, having a miniature hydrogen bell with an elongated narrow tube permitting the use of a 16-millimeter electrode vessel, and about 3 c. c. of blood. The electrode vessel was fitted with a 3-hole rubber stopper to accommodate the electrode, the bridge, and the hydrogen exit. The vessel was suspended in a water bath maintained at 37.5° C. The platinum electrode, 4 mm. square foil, was electroplated in a 1 per cent solution of palladium chloride and then placed in 10 per cent sulphuric acid and the current was continued for a short time to saturate the electrode with hydrogen. The E. M. F. of the electrode and the calomel cell was compared to a certified Weston standard cell and checked against a standard buffer. Saturated KCl served as a bridge. Diffusion of the KCl was prevented by a small cotton plug at the capillary tip of the bridge dipping into the electrode vessel. A 7 per cent carbon dioxide, 93 per cent hydrogen mixture, instead of the usual pure hydrogen, was passed through the blood in the electrode vessel in order to prevent a drift of the potential due to the removal of carbon dioxide. This composition approaches the partial pressure of carbon dioxide in normal venous blood, which was used in subsequent experiments. However, arterial blood was used for the determination of the hydrogen ion concentration in this study in order to reduce the number of blood samples taken. This curtailment of samples was necessitated by the short period of time available for obtaining the blood, as an attempt was made to take the samples as near to death as possible and yet before cessation of circulation. The same hydrogen-carbon dioxide mixture was used for arterial blood in order to eliminate differences due to the carbon dioxide ten-

[8] Folin, O., and Wu, H.: A system of blood analysis. Jour. Biol. Chem., 38 (1919), pp. 81–110.
[9] Benedict, S. R.: The determination of uric acid in blood. Jour. Biol. Chem., 51 (1922), pp. 187–207.
[10] Folin, O.: Laboratory Manual of Biological Chemistry. D. Appleton Co., New York City (1923).

sion, and give results comparable with those obtained in which venous blood was used. Commercial hydrogen and carbon dioxide were found to be sufficiently pure and required no treatment except saturation with water vapor.

The blood gases were determined in a Van Slyke apparatus of the closed manometer type,[11] using 1 c. c. of blood under oil. The blood sample for a determination of the carbon dioxide capacity of the plasma was centrifuged immediately after withdrawal from the animal. Saturation with carbon dioxide was accomplished by bubbling a slow stream of 5 per cent carbon dioxide air mixture (saturated with water vapor) through the plasma for a period of five minutes.

Inorganic phosphorus was determined according to the Bell-Doisy-Briggs method.[12] [13] [14] The blood for this determination was also centrifuged immediately after withdrawal from the animal.

Hemoglobin was computed from the oxygen content of the arterial blood, as determined by the Van Slyke manometric method. The calculations were made on the basis that 100 per cent hemoglobin is equivalent to 23.3 c. c. of oxygen per 100 c. c. of blood, and that the saturation of arterial blood is 96 per cent. The value 23.3 was that found for dog blood which produced a 100 per cent reading on the Sahli hemoglobinometer scale. Hemoglobin determinations made at the end of the exposure were performed by saturating the blood with carbon monoxide and determining the carbon monoxide capacity. As in the case with oxygen the hemoglobin was calculated to a normal scale on the basis that 23.3 c. c. carbon monoxide per 100 c. c. of blood was equivalent to 100 per cent.

RESULTS OF INVESTIGATION

The results of the investigation are given in Tables 2 and 3 and discussed in the following text.

Control experiments which were performed under identical technique, except that the dogs breathed normal air, were observed for a period of 15 hours. Briefly, the results of these control experiments show no significant changes in the blood chemistry and support the conclusion that the changes found in the animals exposed to atmospheres deficient in oxygen were not significantly influenced by experimental technique other than oxygen depletion. The details of the control experiments will be subsequently reported in connection with other work.

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[11] Van Slyke, D. D., and Neill, J. M.: The determination of gases in blood and other solutions by vacuum extraction and manometric measurements. J. Biol. Chem., 61 (1924) pp. 523–584.

[12] Bell, R. D., and Doisy, E. A.: Rapid colorimetric methods for the determination of phosphorus in urine and blood. Jour. Biol. Chem., 44 (1920), pp. 55–67.

[13] Briggs, A P.: A Modification of the Bell-Doisy phosphate method. Jour. Biol. Chem., 53 (1922), pp. 13–16.

[14] Briggs, A. P.: Some applications of the colorimetric phosphate method. Jour. Biol. Chem., 59 (1924), pp. 255–264.

No determinations were made of the blood volume. It is hardly possible that changes of the magnitude of those found for sugar, uric acid, carbon dioxide capacity of the plasma, carbon dioxide in the blood, oxygen in the blood, and pH would be caused by blood volume changes in the short period of exposure. Total and preformed creatinine changes are within experimental error and need not be considered. The changes in urea and nonprotein nitrogen are not great, being in the neighborhood of 10 per cent or less for the majority of tests. These changes may be due to a decrease in blood volume. It is doubtful whether blood volume determinations would be of much value to explain these changes, since there is at least a 5 per cent error, and possibly 10 per cent, in such work, especially under the conditions of our experiments where the circulation is undoubtedly impaired just prior to death.

TABLE 2.—*Blood chemistry of dogs exposed to atmospheres deficient in oxygen*

Dog No.	Duration of exposure before death		Sugar [a]			Urea [a]		
			Normal	At death	Change	Normal	At death	Change
	Minutes	*Seconds*						
39	28	35	96.7	254.2	+157.5	21.2	27.2	+6.0
40	11	4	108.7	147.3	+38.6	29.1	30.6	+1.5
41	21	----------	149.7	570.5	+420.8	32.4	32.9	+.5
42	14	40	87.2	166.5	+79.3	32.2	36.0	+3.8
			Uric acid [a]			Nonprotein nitrogen [a]		
39	28	35	.69	3.4	+2.7	29.8	39.3	+9.5
40	11	4	.70	3.6	+2.9	33.3	37.2	+3.9
41	21	----------	.70	4.7	+4.0	42.5	42.9	+.4
42	14	40	.64	4.0	+3.4	44.1	49.8	+5.7
			Total creatinine [a]			Preformed creatinine [a]		
39	28	35	3.9	3.7	−0.2	1.2	1.2	0.0
40	11	4	4.1	4.0	−.1	1.2	1.3	+.1
41	21	----------	3.1	3.3	+.2	1.1	1.2	+.1
42	14	40	3.0	3.8	+.8	1.2	1.3	+.1

Dog No.	Duration of exposure before death		Inorganic phosphorus in plasma [b]		
			Normal	At death	Change
	Minutes	*Seconds*			
39	28	35	5.3	6.5	+1.2
40	11	4	5.2	5.3	+.1
41	21	----------	4.1	5.6	+1.5
42	14	40	24.8	25.2	+.4

[a] Results are expressed in milligrams per 100 c. c. of blood.
[b] Results are expressed in milligrams per 100 c. c. of plasma.

TABLE 2.—*Blood chemistry of dogs exposed to atmospheres deficient in oxygen*—Continued

Dog No.	Duration of exposure before death		Oxygen in blood, per cent [a]			
			Normal	Intermediate	At death	Change
	Minutes	*Seconds*				
39	28	35	23.42	[c] 3.45	0.72	−22.70
40	11	4	20.00	----------	1.69	−18.31
41	21	----------	22.70	[c] 2.97	.85	−21.85
42	14	40	21.92	----------	.31	−21.61
			Carbon dioxide in blood, per cent [f]			
39	28	35	39.10	[c] 21.34	16.90	−22.20
40	11	4	45.10	----------	26.01	−19.09
41	21	----------	42.56	[c] 20.61	9.77	−32.79
42	14	40	35.11	----------	25.46	−9.65

Dog. No.	Duration of exposure before death		Carbon dioxide capacity of plasma, per cent [f]		
			Normal	At death	Change
	Minutes	*Seconds*			
39	28	35	45	19	−26
40	11	4	53	36	−17
41	21	----------	47	16	−31
42	14	40	40.5	28.5	−12

Dog No.	Duration of exposure before death		Hydrogen-ion concentration expressed as pH			
			Normal	Intermediate	At death	Change
	Minutes	*Seconds*				
39	28	35	7.15	[c] 7.09	6.98	−0.17
40	11	4	7.22	----------	7.20	−.02
41	21	----------	7.21	[c] 7.05	6.88	−.33
42	14	40	7.16	----------	7.06	−.10

[a] Cubic centimeters gas in 100 cubic centimeters of blood.
[c] Taken after 15 minutes' exposure.
[c] Taken after 13 minutes' exposure.
[f] Cubic centimeters gas in 100 cubic centimeters of blood or plasma.

TABLE 3.—*Hemoglobin content and cell counts of the blood of dogs exposed to atmospheres deficient in oxygen*

	Dog No. 39		Dog No. 40		Dog No. 41		Dog No. 42	
	Normal [a]	At death [b]	Normal [a]	At death [b]	Normal [a]	At death [b]	Normal [a]	At death [b]
Hemoglobin	105	(c)	89	90	101	100	98	(c)
Red blood cells	7,040,000	7,030,000	8,300,000	(c)	6,280,000	5,730,000	6,190,000	7,350,000
White blood cells	8,450	13,100	11,550	(c)	11,700	16,500	13,900	15,400
Polymorphonuclears	31	52	71	(c)	59	67	71	80
Lymphocytes	61	39	25	(c)	40	29	28	17
Lymphoblasts	4	3	(d)	(c)	(d)	(d)	(d)	(d)
Eosinophils	3	2	1	(c)	(d)	1	(d)	(d)
Endothelials	1	3	3	(c)	(d)	1	1	3

[a] Normal sample taken before exposure.
[b] Taken just at time of occurrence of death. See Table 2 for duration of exposure before the occurrence of death.
[c] Not determined.
[d] Not found in the 300 cells counted for the differential determination.

BLOOD SUGAR

There was a pronounced hyperglycemia in each animal just prior to death. The normal amount of sugar present ranged from 87.2 to 149.7 mg. per 100 c. c. of blood, while the amount present at death varied from 147.3 to 570.5 mg. per 100 c. c. of blood. The increase in blood sugar ranged from 38.6 mg. to 420.8 mg. per 100 c. c. of blood. There was a general tendency for the increase to parallel the increase in period of exposure. An exception, dog No. 41, showed the greatest change but there was an initial hyperglycemia.

UREA

The amount of urea present in the blood showed a slight increase in all animals.

URIC ACID

There was a large increase in the uric acid in the blood of all animals. The increase ranged from 2.7 mg. to 4.0 mg. per 100 c. c. of blood, the greatest change occurring in the dog that had an initial hyperglycemia and greatest increase in blood sugar with exposure.

NONPROTEIN NITROGEN

The nonprotein nitrogen showed a slight to moderate increase in all animals.

PREFORMED AND TOTAL CREATININE

There was no significant change from the normal in the amount of preformed creatinine in the blood after exposure. Likewise there was but little change in the total creatinine, with the exception of perhaps dog No. 42, in which a moderate increase was observed.

INORGANIC PHOSPHORUS

The inorganic phosphorus showed a definite increase ranging from 0.1 to 1.5 mg. per 100 c. c. of plasma, the change increasing with the period of exposure, with dog No. 41 being again an exception.

HYDROGEN ION CONCENTRATION

In all cases the hydrogen ion concentration showed a definite increase, or, in terms of pH, a decrease. The pH decreased 0.17, 0.02, 0.33, and 0.10, respectively, for dogs numbered 39, 40, 41, and 42, or an average of 0.16 pH. The change, with one exception, increased with the period of exposure. The exception again occurred with dog No. 41.

CARBON DIOXIDE CAPACITY OF THE PLASMA

There was a marked fall in the carbon dioxide capacity in all the animals. From an average of 46 per cent (or 46 c. c. per 100 c. c. of plasma) the carbon dioxide capacity fell to an average of 25 per cent at death.

BLOOD GASES

There was a fall of carbon dioxide in the blood which paralleled, in general, the change in carbon dioxide capacity of the plasma. Hemoglobin determinations by the carbon monoxide saturation method for two of the animals at the end of the exposure indicated that there was no significant change in the hemoglobin. Calculating on the basis that normal blood is 96 per cent saturated, the intermediate saturation values for dogs numbered 39 and 41 are 14.1 and 12.6 per cent, respectively; and the saturation at death was 3, 8, 3.6, and 1.3 per cent, respectively, for dogs numbered 39, 40, 41, and 42. Saturation values calculated from the carbon monoxide capacity at death for dogs numbered 40 and 41 were the same as given above.

BLOOD COUNTS

The blood counts showed no significant change in the red cells, with one exception, in which there was a definite increase; a moderate increase in the total number of white blood cells; an increase in the polymorphonuclears and a corresponding decrease in lymphocytes.

SUMMARY AND CONCLUSIONS

A study was made of blood chemistry changes in dogs exposed to atmospheres which were depleted of oxygen at a rate which caused a progressive asphyxial condition simulating asphyxia resulting from exposure to approximately 0.6 per cent carbon monoxide in air by volume. The conditions caused death in 11 to 28.5 minutes. The study was made not only to ascertain the changes attending asphyxia by insufficient atmospheric oxygen, but also as a parallel to a similar study of the changes attending asphyxia by carbon monoxide in order to ascertain if there were changes which were peculiar to each type of asphyxia or if they were identical and due entirely to anoxemia.

1. There was a marked hyperglycemia and hyperuricemia; the nonprotein nitrogen and urea increased slightly; the total and preformed creatinine remained practically normal; and the inorganic phosphorus increased.

2. There was an increase in the hydrogen ion concentration and a marked decrease in the carbon dioxide capacity of the plasma, and the carbon dioxide content of the blood.

3. The oxygen saturation of the arterial blood at death ranged from 1.3 to 8 per cent.

4. The red blood cells increased in one case, but showed no significant change in two. The white blood cells and polymorphonuclears increased while the lymphocytes decreased.

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SEVENTH AMERICAN SCIENTIFIC CONGRESS POSTPONED UNTIL 1933

The Mexican ambassador has informed the State Department that the Seventh American Scientific Congress, called to meet in the City of Mexico during the month of February, 1932, has been postponed until November, 1933.

The ambassador states:

> In view of the general situation which prevents the majority of the countries of America from sending direct representatives to the Seventh American Scientific Congress, called for the month of February, 1932, in the City of Mexico, and considering the preparation required for the meeting in the same year of the Seventh International Conference of American States, it has been decided to postpone the holding of the said Scientific Congress until the month of November, 1933.
>
> By instruction from my Government, I venture to request that Your Excellency be good enough to notify interested committees and organizations of the foregoing, suggesting to local committees the desirability of continuing the preparatory work they have already begun.

COURT DECISION RELATING TO PUBLIC HEALTH

Status of employees of board of health of city health district.—(Ohio Court of Appeals; Board of Health of City of Canton et al. *v.* State ex rel. O'Wesney, 178 N. E. 215; decided Feb. 16, 1931.) By a mandamus proceeding it was sought to require the board of health of the city of Canton to certify to the city auditor that the relator was entitled to be paid a certain sum of money as an employee of the board and to require the auditor to issue his warrant therefor to the city treasurer. It was alleged that the relator passed an examination before the civil service commission of Canton; that he was appointed meat inspector for the defendant board; that subsequently, after hearing charges against him, he was dismissed by the board from its service; and that, after explanations had been filed with the city civil service commission, the charges were dismissed by such commission as being unfounded and untrue. The defendants contended that the relator was not an employee of the city of Canton but an employee of the city board of health, which was a distinct political

subdivision of the State, independent of the city itself; that the board had absolute control over its employees; and that the order of the civil service commission was made without authority and was a nullity.

The court of appeals stated that the question presented was "whether or not the civil service laws of this State, as now enacted, apply to persons in the employ of a city district board of health," and, after reviewing the pertinent statutes, reached the conclusion "that the relator is not an employee of the city; that he is not entitled to the emoluments of his office, which he did not hold under the provisions of the civil service law; that the board of health of the Canton city district had the power to remove him from office; and that the acts of the city's civil service commission in reviewing and dismissing the charges against the relator and its attempt at reinstatement of the relator to office were of no force and effect in law and were a nullity."

DEATHS DURING WEEK ENDED DECEMBER 26, 1931

Summary of information received by telegraph from industrial insurance companies for the week ended December 26, 1931, and corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

	Week ended Dec. 26, 1931	Corresponding week, 1930
Policies in force	74, 282, 027	74, 818, 700
Number of death claims	10, 920	12, 146
Death claims per 1,000 policies in force, annual rate	7. 7	8. 5
Death claims per 1,000 policies, first 52 weeks of year, annual rate	9. 5	9. 5

Deaths [1] from all causes in certain large cities of the United States during the week ended December 26, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

[The rates published in this summary are based upon mid-year population estimates derived from the 1930 census]

City	Week ended Dec. 26, 1931				Corresponding week, 1930		Death rate [2] for the first 52 weeks	
	Total deaths	Death rate [2]	Deaths under 1 year	Infant mortality rate [3]	Death rate [2]	Deaths under 1 year	1931	1930
Total (82 cities)	7, 323	10. 7	544	[4] 43	12. 1	713	11. 7	11. 9
Akron	38	7. 5	1	10	6. 5	4	7. 5	7. 8
Albany [5]	40	16. 2	3	60	18. 8	8	14. 1	14. 8
Atlanta [6]	61	11. 5	5	49	16. 5	9	14. 9	15. 3
White	34	9. 6	2	30	12. 4	6	11. 5	11. 5
Colored	27	15. 1	3	87	24. 7	3	21. 5	23. 1
Baltimore [5] [6]	200	12. 8	13	45	13. 8	22	14. 1	13. 9
White	152	11. 9	6	27	13. 0	12	12. 9	12. 7
Colored	48	17. 0	7	112	17. 8	10	19. 9	19. 6

See footnotes at end of table.

Deaths [1] from all causes in certain large cities of the United States during the week ended December 26, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930—Continued

City	Week ended Dec. 26, 1931				Corresponding week, 1930		Death rate [2] for the first 52 weeks	
	Total deaths	Death rate [2]	Deaths under 1 year	Infant mortality rate [3]	Death rate [2]	Deaths under 1 year	1931	1930
Birmingham [4]	60	11.6	4	40	14.0	14	13.0	13.5
White	29	9.1	3	51	11.9	10	10.0	10.1
Colored	31	15.8	1	24	17.2	4	17.9	19.1
Boston	174	11.6	12	35	13.9	20	14.1	14.0
Bridgeport	31	11.0	2	34	7.8	1	11.0	10.8
Buffalo	127	11.4	9	41	13.0	16	12.8	12.9
Cambridge	38	17.4	1	21	14.2	2	12.1	11.9
Camden	31	13.6	4	69	8.3	5	14.2	13.3
Canton	18	8.8	1	25	6.9	0	9.9	9.8
Chicago [5]	600	9.0	55	49	10.1	45	10.4	10.4
Cincinnati	110	12.5	4	24	14.2	7	15.6	15.5
Cleveland	194	11.1	23	67	10.9	14	11.0	11.0
Columbus	56	9.9	2	19	15.6	11	13.4	15.3
Dallas [6]	60	11.5	9	-------	12.7	9	11.1	11.5
White	44	10.2	8	-------	11.8	7	9.8	10.5
Colored	16	17.6	1	-------	17.3	2	17.3	16.1
Dayton	32	7.2	2	28	9.7	3	10.4	9.6
Denver	85	15.2	3	30	16.6	7	13.8	15.0
Des Moines	33	11.9	5	95	11.7	5	11.0	11.6
Detroit	261	8.2	19	30	9.8	38	8.1	9.2
Duluth	18	9.2	1	27	13.4	1	11.2	11.6
El Paso	22	10.9	2	-------	19.3	4	14.9	17.1
Erie	24	10.6	3	62	10.3	2	10.4	11.0
Fall River [7]	29	13.1	1	24	8.1	3	11.1	11.5
Flint	12	3.8	1	13	6.3	2	6.7	8.9
Fort Worth [6]	30	9.3	2	-------	11.4	7	10.5	11.0
White	23	8.6	1	-------	12.5	6	10.1	10.5
Colored	7	13.4	1	-------	5.9	1	12.3	13.7
Grand Rapids	26	7.9	2	30	9.2	2	9.0	10.1
Houston [6]	42	7.1	6	-------	12.4	4	11.0	12.1
White	32	7.4	5	-------	11.5	3	10.1	10.8
Colored	10	6.3	1	-------	14.6	1	13.3	15.8
Indianapolis [6]	88	12.4	10	77	16.1	7	13.5	14.4
White	70	11.2	9	79	15.1	6	13.0	13.4
Colored	18	20.8	1	61	23.5	1	17.1	21.1
Jersey City	56	9.2	2	18	13.0	12	11.2	11.3
Kansas City, Kans. [8]	17	7.2	3	66	12.0	1	12.5	11.8
White	16	8.4	3	80	12.1	1	11.8	11.2
Colored	1	2.2	0	0	11.4	0	15.3	14.6
Kansas City, Mo	83	10.6	3	24	11.6	8	12.8	13.1
Knoxville [6]	17	8.1	2	43	15.2	4	12.5	13.4
White	12	6.8	1	24	14.0	3	11.7	12.5
Colored	5	14.6	1	194	21.1	1	16.6	18.4
Long Beach	25	8.6	2	50	14.9	4	9.8	10.2
Los Angeles	298	11.8	18	52	16.0	24	10.8	11.1
Louisville [6]	49	8.3	0	0	14.4	12	13.6	13.5
White	38	7.6	0	0	13.0	10	12.2	12.0
Colored	11	12.0	0	0	22.0	2	21.1	21.7
Lowell [7]	22	11.4	3	78	14.6	4	12.9	13.2
Lynn	14	7.1	2	58	13.2	2	9.4	10.5
Memphis [6]	70	14.1	11	117	14.8	11	16.3	16.8
White	32	10.4	7	118	14.3	7	13.3	13.2
Colored	38	20.0	4	116	15.6	4	21.3	22.6
Miami [6]	22	10.2	4	103	9.4	4	11.5	11.0
White	15	9.0	3	108	7.9	3	10.7	9.8
Colored	7	14.4	1	91	14.5	1	14.4	15.4
Milwaukee	88	7.7	10	45	9.4	12	9.0	9.7
Minneapolis	68	7.5	5	32	12.0	11	10.8	10.8
Nashville [6]	57	19.1	5	75	14.9	6	16.7	16.4
White	36	16.7	5	99	13.6	4	14.4	13.8
Colored	21	25.6	0	0	18.2	2	22.8	23.1
New Bedford [7]	16	7.4	2	52	10.7	2	12.0	11.0
New Haven	39	12.5	0	0	16.3	2	12.6	12.5
New Orleans [6]	137	15.3	8	45	21.2	20	16.5	17.4
White	90	14.1	5	42	18.7	11	13.5	14.4
Colored	47	18.2	3	50	27.3	9	23.9	24.9

See footnotes at end of table

Deaths [1] from all causes in certain large cities of the United States during the week ended December 26, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930—Continued

City	Week ended Dec. 26, 1931				Corresponding week, 1930		Death rate [2] for the first 52 weeks	
	Total deaths	Death rate [2]	Deaths under 1 year	Infant mortality rate [3]	Death rate [2]	Deaths under 1 year	1931	1930
New York	1,295	9.5	94	40	11.3	122	10.9	10.7
Bronx Borough	174	6.8	10	28	8.6	12	8.1	7.8
Brooklyn Borough	463	9.2	32	34	9.8	44	10.1	9.8
Manhattan Borough	468	13.4	38	51	17.0	50	16.4	16.0
Queens Borough	151	6.8	12	48	8.5	15	7.1	7.1
Richmond Borough	39	12.4	2	38	11.8	1	13.4	13.7
Newark, N. J.	83	9.7	5	27	12.2	10	11.4	12.0
Oakland	73	13.0	2	25	13.1	2	10.9	11.1
Oklahoma City	34	9.0	5	70	8.9	1	10.6	10.9
Omaha	40	9.6	3	35	13.1	6	13.7	13.5
Paterson	26	9.8	1	17	10.9	4	13.1	12.1
Peoria	22	10.6	2	53	10.9	1	12.3	12.2
Philadelphia	478	12.7	46	67	11.1	29	12.8	12.6
Pittsburgh	149	11.5	17	59	15.5	17	14.2	13.8
Portland, Oreg.	63	10.7	4	49	9.8	2	11.6	12.0
Providence	63	12.9	3	27	15.4	5	12.6	12.9
Richmond [6]	50	14.1	3	44	15.9	6	15.3	14.9
White	33	13.1	1	22	14.0	4	13.0	12.2
Colored	17	16.8	2	87	20.7	2	21.2	21.3
Rochester	73	11.5	2	18	11.6	6	11.7	11.5
St. Louis	202	12.7	10	36	13.4	11	14.7	14.0
St. Paul	51	9.6	4	41	10.1	1	10.4	10.1
Salt Lake City [5]	32	11.7	6	90	14.8	2	11.9	12.6
San Antonio	65	14.1	7	----	16.3	14	14.1	15.8
San Diego	50	16.7	0	0	14.0	4	13.7	14.5
San Francisco	166	13.3	5	33	11.0	5	13.0	13.0
Schenectady	23	12.5	0	0	10.3	3	10.9	11.0
Seattle	105	14.7	4	39	10.4	1	11.4	10.9
Somerville	17	8.4	1	31	10.0	3	8.9	9.7
South Bend	15	7.2	2	52	8.9	2	8.0	9.0
Spokane	22	9.9	0	0	10.8	1	12.4	12.4
Springfield, Mass.	37	12.7	1	17	12.5	5	11.4	12.1
Syracuse	43	10.5	5	61	13.4	3	11.5	11.6
Tacoma	26	12.6	0	0	11.2	0	12.4	12.4
Toledo	54	9.5	3	28	10.6	7	11.7	12.6
Trenton	35	14.7	1	18	10.6	5	16.2	16.4
Utica	31	15.8	1	28	14.8	3	14.3	14.6
Washington, D. C. [6]	141	15.0	9	50	14.6	8	15.8	15.1
White	83	12.2	4	33	12.9	3	13.5	13.0
Colored	58	22.4	5	85	19.2	5	22.1	20.8
Waterbury	11	5.7	0	0	5.7	1	9.5	9.4
Wilmington, Del. [7]	22	10.8	2	45	18.1	2	13.8	14.5
Worcester	59	15.6	3	43	15.2	1	12.0	12.8
Yonkers	20	7.5	4	97	8.5	1	8.3	8.2
Youngstown	29	8.7	4	55	10.4	8	9.7	10.4

[1] Deaths of nonresidents are included. Stillbirths are excluded.

[2] These rates represent annual rates per 1,000 population, as estimated for 1931 and 1930 by the arithmetical method.

[3] Deaths under 1 year of age per 1,000 live births. Cities left blank are not in the registration area for births.

[4] Data for 77 cities.

[5] Deaths for week ended Friday.

[6] For the cities for which deaths are shown by color the percentages of colored population in 1930 were as follows: Atlanta, 33; Baltimore, 18; Birmingham, 38; Dallas, 17; Fort Worth, 16; Houston, 27; Indianapolis, 12; Kansas City, Kans., 19; Knoxville, 16; Louisville, 15; Memphis, 38; Miami, 23; Nashville, 28; New Orleans, 29; Richmond, 29; and Washington, D. C., 27.

[7] Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended January 2, 1932, and January 3, 1931

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 2, 1932, and January 3, 1931

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931
New England States:								
Maine	6	6	2	2	375	11	0	1
New Hampshire	6	----	----	----	2	76	0	0
Vermont	----	4	----	----	162	8	0	0
Massachusetts	44	75	11	4	345	451	0	1
Rhode Island	5	5	7	----	666	----	0	0
Connecticut	5	9	2	2	61	168	0	0
Middle Atlantic States:								
New York	121	139	[1] 16	[1] 68	646	120	9	8
New Jersey	16	93	14	26	16	178	0	2
Pennsylvania	125	215	----	----	941	692	3	13
East North Central States:								
Ohio	159	84	40	26	153	53	3	9
Indiana	64	40	30	34	64	216	21	11
Illinois	122	135	19	22	36	457	3	7
Michigan	42	98	2	5	69	77	3	7
Wisconsin	15	22	15	6	79	158	2	0
West North Central States:								
Minnesota	19	12	3	----	48	15	3	3
Iowa	22	10	----	----	6	1	1	0
Missouri	55	43	3	12	10	983	1	3
North Dakota	6	10	----	----	24	15	0	0
South Dakota	6	5	----	----	35	----	0	0
Nebraska	6	6	2	17	5	8	0	0
Kansas	45	27	2	2	20	4	1	0
South Atlantic States:								
Delaware	8	6	1	4	1	3	0	0
Maryland [2]	49	18	42	11	13	57	1	1
District of Columbia	6	5	----	----	2	14	1	0
West Virginia	29	11	15	61	265	21	0	1
North Carolina	73	56	34	28	67	125	3	0
South Carolina [3]	24	21	387	703	21	----	0	2
Georgia [3]	11	15	58	85	----	78	0	19
Florida	9	----	3	4	1	42	0	2

[1] New York City only.
[2] Week ended Friday.
[3] Typhus fever, current week, 2 cases: 1 case in South Carolina and 1 case in Georgia.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 2, 1932, and January 3, 1931—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931
East South Central States:								
Kentucky	53	8				18	6	4
Tennessee	52	16	49	85	10	81	4	3
Alabama	45	30	52	60	6	233	1	1
Mississippi	23	23					1	1
West South Central States:								
Arkansas	19	13	6	89	1	2	0	0
Louisiana	34	50	4	48	12	1	1	1
Oklahoma [4]	58	34	53	77	1	31	0	1
Texas	94	49	14	14		101	1	1
Mountain States:								
Montana	1				98	3	0	1
Idaho	1			1		28	0	0
Wyoming				3	9	1	0	1
Colorado	4	9			1	40	1	1
New Mexico	38	4			1	40	1	0
Arizona	6	2	6	6		83	0	1
Utah [2]		6	4	1		5	0	1
Pacific States:								
Washington	5	11			187	27	1	1
Oregon	1	7	65	20	6	49	1	1
California	63	53	161	54	177	169	6	12

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931
New England States:								
Maine	2	3	35	24	0	0	3	4
New Hampshire	1	0	10	2	1	0	0	0
Vermont	0	0	12	1	10	3	0	1
Massachusetts	1	5	372	262	0	0	20	2
Rhode Island	0	0	50	22	0	0	0	0
Connecticut	0	0	65	57	2	0	2	2
Middle Atlantic States:								
New York	17	4	582	494	3	1	19	7
New Jersey	0	0	144	210	0	0	2	7
Pennsylvania	2	3	495	601	0	0	16	13
East North Central States:								
Ohio	2	5	595	576	22	58	20	19
Indiana	4	0	81	213	10	98	9	1
Illinois	1	6	287	345	38	34	13	21
Michigan	2	3	251	358	4	52	4	8
Wisconsin	1	2	65	102	8	3	3	5
West North Central States:								
Minnesota	1	2	46	35	9	2	1	0
Iowa	3	1	32	62	47	23	0	1
Missouri	0	2	56	119	19	6	0	1
North Dakota	0	0	18	21	12	7	3	3
South Dakota	1	0	14	16	12	16	2	1
Nebraska	1	2	39	37	5	76	1	0
Kansas	0	1	60	41	1	52	3	3
South Atlantic States:								
Delaware	0	0	17	31	0	0	0	0
Maryland [3]	0	0	86	86	0	0	10	7
District of Columbia	0	3	23	30	0	0	1	0
West Virginia	1	0	22	39	6	8	24	2
North Carolina	0	0	73	75	0	1	4	3
South Carolina [3]	0	1	14	11	2	0	12	5
Georgia [3]	0	0	26	27	1	0	7	2
Florida	0	0	12	16	0	0	1	3

[1] Week ended Friday.
[3] Typhus fever, current week, 2 cases: 1 case in South Carolina and 1 case in Georgia.
[4] Figures for current week are exclusive of Oklahoma City and Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended January 2, 1932, and January 3, 1931—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931	Week ended Jan. 2, 1932	Week ended Jan. 3, 1931
East South Central States:								
Kentucky	0	0	81	60	0	5	3	2
Tennessee	1	0	43	54	12	6	13	4
Alabama	0	0	44	64	1	1	17	8
Mississippi	1	0	17	25	22	5	4	7
West South Central States:								
Arkansas	0	0	17	12	26	3	2	5
Louisiana	1	2	28	17	2	6	6	6
Oklahoma [4]	0	1	42	61	4	71	5	11
Texas	0	0	49	35	22	11	12	10
Mountain States:								
Montana	3	0	21	39	2	18	1	0
Idaho	0	0	8	5	2	2	0	2
Wyoming	0	0	8	12	1	2	0	2
Colorado	0	0	21	35	5	4	1	0
New Mexico	0	0	29	5	1	1	3	1
Arizona	0	0	6	4	2	0	1	1
Utah [3]	0	2	5	3	0	0	0	2
Pacific States:								
Washington	0	0	56	41	10	22	3	5
Oregon	0	1	31	8	6	13	1	1
California	5	16	115	86	9	67	3	8

[3] Week ended Friday.
[4] Figures for current week are exclusive of Oklahoma City and Tulsa.

Report for Week Ended December 26, 1931

TEXAS

	Cases		Cases
Diphtheria	74	Scarlet fever	58
Influenza	7	Smallpox	9
Measles	3	Typhoid fever	15
Poliomyelitis	1		

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week:

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
November, 1931										
California	15	456	200	7	574	4	16	579	28	45
Louisiana	8	243	40	66	28	39	3	148	14	96
Nevada			3					5	0	0
North Carolina	9	691	214		184	177	12	714	4	64
Oklahoma [1]	5	431	88	69	8	11	2	192	23	107
Texas	4	364	33	642		5	1	183		48
Virginia	5	1,335	769	31	211	13	5	729	6	130
Washington	4	50	36		135		9	235	58	22
Wisconsin	3	95	64		101		36	294	29	16

[1] Exclusive of Oklahoma City and Tulsa.

November, 1931

	Cases
Anthrax:	
California	1
Botulism:	
California	2
Chicken pox:	
California	1,031
Louisiana	12
Nevada	2
North Carolina	389
Oklahoma [1]	46
Virginia	419
Washington	442
Wisconsin	1,172
Conjunctivitis:	
Oklahoma [1]	1
Diarrhea and dysentery:	
Virginia	126
Dysentery:	
California (amebic)	9
California (bacillary)	20
Louisiana	3
Oklahoma [1]	11
Washington	6
Food poisoning:	
California	7
German measles:	
California	33
North Carolina	12
Washington	17
Wisconsin	19
Hookworm disease:	
Louisiana	22
Impetigo contagiosa:	
Washington	11
Leprosy:	
California	1
Lethargic encephalitis:	
California	3
Louisiana	3
Washington	1
Wisconsin	1
Mumps:	
California	409
Louisiana	3
Oklahoma [1]	30
Washington	97
Wisconsin	518
Ophthalmia neonatorum:	
California	2
Oklahoma [1]	1
Paratyphoid fever:	
California	13
Louisiana	1
Puerperal septicemia:	
Washington	2
Rabies in animals:	
California	36
Louisiana	8
Rocky Mountain spotted or tick fever:	
Nevada	1
Scabies:	
Oklahoma [1]	4
Washington	1
Septic sore throat:	
California	4
Louisiana	4
North Carolina	15
Oklahoma [1]	22
Tetanus:	
California	7
Louisiana	3
Trachoma:	
California	18
Oklahoma [1]	4
Trichinosis:	
California	2
Tularaemia:	
Louisiana	2
Virginia	2
Wisconsin	3
Typhus fever:	
North Carolina	3
Virginia	1
Undulant fever:	
California	8
Louisiana	2
Oklahoma [1]	1
Virginia	1
Washington	1
Wisconsin	7
Vincent's angina:	
Washington	1
Whooping cough:	
California	351
Louisiana	19
Nevada	11
North Carolina	536
Oklahoma [1]	25
Virginia	738
Washington	62
Wisconsin	667

[1] Exclusive of Oklahoma City and Tulsa.

Cases of Certain Communicable Diseases Reported for the Month of October, 1931, by State Health Officers

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid and paratyphoid fever	Whooping cough
Maine	50	17	346	8	64	0	54	39	36
New Hampshire		15			27	0		2	
Vermont	46	9	78	25	21	20	[1] 21	2	123
Massachusetts	208	196	173	293	682	0	458	35	323
Rhode Island	12	18	235	9	55	0	53	4	9
Connecticut	30	20	31	44	100	0	122	21	196
New York	412	318	296	232	886	26	1,732	191	1,117
New Jersey	153	118	50	43	326	0	408	37	672
Pennsylvania	691	409	527	516	882	0	720	336	1,537
Ohio	583	734	152	381	1,438	16	602	224	914
Indiana	120	270	77	44	293	31	198	71	95
Illinois	292	402	85	101	795	34	721	176	894
Michigan	253	156	132	136	491	22	449	79	869
Wisconsin	382	86	51	352	221	7	124	17	550
Minnesota	212	102	25		180	5	263	22	77
Iowa	126	76	16	19	119	73	50	25	61
Missouri	77	470	24	11	363	18	257	121	351
North Dakota	35	21	21	54	44	17	14	24	89
South Dakota	102	34	119	37	41	11	5	11	24
Nebraska	71	81	5	35	73	10	30	6	38
Kansas	175	217	59	88	275	11	130	45	62
Delaware	3		2	11		0	21		25
Maryland	49	302	33	58	311	0	245	188	584
District of Columbia	6	63	5		55	0	99	13	52
Virginia	87	1,360	78		557	4	151	215	542
West Virginia	59	437	229		319	1	57	306	140
North Carolina	109	865	148		581	5		116	345
South Carolina	45	310	29	66	90	7	141	121	91
Georgia	12	232	18	9	127		152	152	18
Florida	3	101	126	8	18	0	36	17	18
Kentucky [2]									
Tennessee	15	802	16	32	359	13	176	252	189
Alabama	57	557	31	63	304	9	441	128	58
Mississippi	153	725	14	36	229	77	116	114	252
Arkansas	15	233	16	7	116	10	[1] 21	76	9
Louisiana	1	164	18	1	83	4	[1] 178	139	16
Oklahoma [3]	1	577	10	7	193	15	49	221	45
Texas		225			167			162	
Montana	54	2	118	4	45	1	41	21	44
Idaho	76		8	23	60	4	[1] 9	17	4
Wyoming	29	2	1	7	17	1	[1] 1	1	8
Colorado	107	30	11	28	76	0	58	63	34
New Mexico	25	78	1	16	34	1	85	54	11
Arizona	50	26	3	3	22	1	143	17	14
Utah [2]									
Nevada	3	2			4	1	2	3	4
Washington	331	41	69	58	165	22	142	22	104
Oregon	178	16	37	68	64	19	37	16	24
California	512	338	442	351	461	28	735	63	363

[1] Pulmonary.
[2] Reports received weekly.
[3] Exclusive of Oklahoma City and Tulsa.

Case Rates per 100,000 Population (Annual Basis) for the Month of October, 1931

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid and paratyphoid	Whooping cough
Maine	73	25	509	12	94	0	79	57	53
New Hampshire		38			68	0		5	
Vermont	150	29	255	82	69	65	[1] 69	7	402
Massachusetts	57	54	47	80	187	0	136	10	88
Rhode Island	20	30	397	15	93	0	89	7	15
Connecticut	22	14	22	32	72	0	88	15	141
New York	38	29	27	21	81	2	159	17	102
New Jersey	43	33	14	12	93	0	116	10	191
Pennsylvania	84	49	64	62	107	0	87	41	186
Ohio	102	128	26	66	251	3	105	39	159
Indiana	43	97	28	16	105	11	71	26	34
Illinois	44	61	13	15	120	5	109	27	135
Michigan	60	37	31	32	116	5	106	19	205
Wisconsin	151	34	20	139	87	3	49	7	221
Minnesota	97	46	11		82	2	120	10	35
Iowa	60	36	8	9	57	35	24	12	29
Missouri	25	151	8	4	117	6	83	39	113
North Dakota	60	36	36	93	76	29	24	41	153
South Dakota	172	57	200	62	69	19	8	19	40
Nebraska	60	69	4	30	62	8	25	5	32
Kansas	109	135	37	55	171	7	81	28	39
Delaware	15		10	54		0	103		123
Maryland	35	215	23	41	221	0	174	134	416
District of Columbia	14	150	12		131	0	236	31	124
Virginia	42	657	38		269	2	73	104	262
West Virginia	39	292	153		213	1	38	205	94
North Carolina	40	314	54		211	2		42	125
South Carolina	30	209	20	45	61	5	95	82	61
Georgia	5	94	7	4	51	0	61	61	7
Florida	2	78	97	6	14	0	28	13	14
Kentucky [2]									
Tennessee	7	356	7	14	159	6	78	112	84
Alabama	25	244	14	28	133	4	194	56	25
Mississippi	88	419	8	21	132	45	67	66	146
Arkansas	9	147	10	4	73	6	[1] 13	48	6
Louisiana	1	90	10	1	46	2	[1] 98	77	9
Oklahoma [3]	1	324	6	4	109	8	28	124	25
Texas		44			33			32	
Montana	118	4	258	9	99	2	90	46	96
Idaho	200		21	61	158	11	[1] 24	45	11
Wyoming	149	10	5	36	87	5	[1] 5	5	41
Colorado	120	34	12	31	85	0	65	71	38
New Mexico	68	213	3	44	93	3	232	148	30
Arizona	131	68	8	8	58	3	376	45	37
Utah [2]									
Nevada	38	25			51	13	25	38	51
Washington	245	30	51	43	122	16	105	16	77
Oregon	215	19	45	82	77	23	45	19	29
California	101	67	87	69	91	6	145	12	72

[1] Pulmonary.
[2] Reports received weekly.
[3] Exclusive of Oklahoma City and Tulsa.

ADMISSIONS TO HOSPITALS FOR THE INSANE, NOVEMBER, 1929

Reports for the month of November, 1929, showing new admissions to hospitals for the care and treatment of the insane, were received by the Public Health Service from 122 hospitals, located in 41 States, the District of Columbia, and the Territory of Hawaii. The 122 hospitals had 191,181 patients on November 30, 1929, 101,692 males and 89,489 females, the ratio being 114 males per 100 females.

The following table gives the number of new admissions for the month of November, 1929, by psychoses:

Psychoses	Number of first admissions		
	Male	Female	Total
1. Traumatic psychoses	4	1	5
2. Senile psychoses	152	110	262
3. Psychoses with cerebral arteriosclerosis	192	90	282
4. General paralysis	221	72	293
5. Psychoses with cerebral syphilis	25	8	33
6. Psychoses with Huntington's chorea	3	4	7
7. Psychoses with brain tumor	3	0	3
8. Psychoses with other brain or nervous disease	28	11	39
9. Alcoholic psychoses	131	17	148
10. Psychoses due to drugs and other exogenous toxins	26	7	33
11. Psychoses with pellagra	9	19	28
12. Psychoses with other somatic diseases	37	40	77
13. Manic-depressive psychoses	201	264	465
14. Involution melancholia	21	54	75
15. Dementia præcox (schizophrenia)	340	277	617
16. Paranoia and paranoid conditions	28	24	52
17. Epileptic psychoses	46	28	74
18. Psychoneuroses and neuroses	16	46	62
19. Psychoses with psychopathic personality	12	9	21
20. Psychoses with mental deficiency	65	49	114
21. Undiagnosed psychoses	114	76	190
22. Without psychosis	176	59	235
Total	1,850	1,265	3,115

During the month of November, 1929, there were 3,115 new admissions to the hospitals, 59.4 per cent of these new admissions being males and 40.6 per cent females, the ratio being 146 males per 100 females. Four hundred and twenty-five of the new admissions were reported as being undiagnosed or "without psychosis." There were 2,690 new admissions for whom a provisional diagnosis was made. Of these 2,690 patients, cases of dementia præcox constituted 22.9 per cent; manic-depressive psychoses, 17.3 per cent; general paralysis, 10.9 per cent; psychoses with cerebral arteriosclerosis, 10.5 per cent; and senile psychoses, 9.7 per cent. These five classes accounted for 71.3 per cent of the new admissions for whom diagnoses were made.

The following table shows the number of patients in the hospitals and on parole on November 30, 1929:

	Total patients on books		
	Male	Female	Total
Total patients on books last day of month:			
In hospitals	90,554	80,634	171,188
On parole or otherwise absent, but still on books	11,138	8,855	19,993
Total	101,692	89,489	191,181

Of the 191,181 patients, 11,138 males and 8,855 females were on parole or otherwise absent but still on the books at the end of the month—11 per cent of the males, 9.9 per cent of the females, and 10.5 per cent of the total number of patients.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 97 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,370,000. The estimated population of the 90 cities reporting deaths is more than 31,825,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended December 26, 1931, and December 27, 1930

	1931	1930	Estimated expectancy
Cases reported			
Diphtheria:			
46 States	1,472	1,110	----
97 cities	464	451	918
Measles:			
45 States	3,183	3,202	----
97 cities	811	1,141	----
Meningococcus meningitis:			
46 States	50	88	----
97 cities	27	92	----
Poliomyelitis:			
46 States	39	53	----
Scarlet fever:			
46 States	3,464	3,596	----
97 cities	1,197	1,397	1,208
Smallpox:			
46 States	323	440	----
97 cities	23	44	31
Typhoid fever:			
46 States	265	205	----
97 cities	40	45	33
Deaths reported			
Influenza and pneumonia:			
90 cities	673	822	----
Smallpox:			
90 cities	0	0	----

City reports for week ended December 26, 1931

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics, or when for other reasons the median is unsatisfactory, the epidemic periods are excluded, and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1922 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND								
Maine:								
Portland	11	1	1		0	27	0	1
New Hampshire:								
Concord	0	0	0		0	0	0	0
Nashua	0	0	0		0	0	0	0
Vermont:								
Barre	0	0	0		0	0	0	0
Massachusetts:								
Boston	50	43	14	6	1	6	8	17
Fall River	1	4	3		0	1	0	2
Springfield	11	5	1		0	0	4	1
Worcester	10	6	3		0	1	22	5
Rhode Island:								
Pawtucket	0	1	0		0	0	0	0
Providence	7	7	3		1	357	16	5
Connecticut:								
Bridgeport	6	6	1	1	1	1	0	5
Hartford	1	7	0		0	0	1	1
New Haven	13	0	1	1	0	0	11	2
MIDDLE ATLANTIC								
New York:								
Buffalo	24	13	0		1	10	2	14
New York	97	170	109	13	5	18	37	130
Rochester	6	6	0		0	15	5	5
Syracuse	13	2	0		0	4	1	2
New Jersey:								
Camden	5	5	0	2	2	0	0	5
Newark	42	17	2	3	0	0	7	10
Trenton	9	2	0	2	0	2	9	3
Pennsylvania:								
Philadelphia	68	61	4	5	6	4	8	43
Pittsburgh	28	21	11	3	1	94	24	13
Reading	4	1	1		0	0	0	1
EAST NORTH CENTRAL								
Ohio:								
Cincinnati	8	10	8		1	0	0	8
Cleveland	73	36	10	12	0	26	33	13
Columbus	10	5	9	1	0	1	0	3
Toledo	53	9	5		0	2	3	1
Indiana:								
Fort Wayne	3	3	8		1	0	0	1
Indianapolis	18	9	2		0	0	19	12
South Bend		1						
Terre Haute	7	0	3		0	0	0	0
Illinois:								
Chicago	72	121	34	2	4	13	0	54
Peoria	5	1	2		0	0	0	2
Springfield	3	1	2		0	0	1	3
Michigan:								
Detroit	28	60	27	2	1	2	1	20
Flint	11	2	1		0	1	13	2
Grand Rapids	3	1	6		1	6	4	1

City reports for week ended December 26, 1931—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued								
Wisconsin:								
Kenosha	8	0	1		0	0	0	0
Madison	7	2	2			0	0	
Milwaukee	55	17	2		0	3	13	8
Racine	16	2	0		0	0	22	1
Superior	2	0	0		0	0	5	0
WEST NORTH CENTRAL								
Minnesota:								
Duluth	3	0	0		0	0	1	1
Minneapolis	15	16	2		0	1	5	5
St. Paul	5	8	5		0	2	0	5
Iowa:								
Des Moines	0	1	7			0	0	
Sioux City	2	1	5			0	0	
Waterloo	5	0	0			0	0	
Missouri:								
Kansas City	20	6	20		0	1	0	9
St Joseph	1	0	4		0	0	0	5
St. Louis	33	40	19	4	1	0	2	8
North Dakota:								
Fargo	1	0	0		0	21	0	0
Grand Forks	5	0	0			0	0	
South Dakota:								
Aberdeen	10	0	0			13	0	
Nebraska:								
Omaha	4	5	11		0	0	0	3
Kansas:								
Topeka	3	1	0		0	0	0	0
Wichita	7	2	4		0	1	0	4
SOUTH ATLANTIC								
Delaware:								
Wilmington	1	1	1		0	0	1	4
Maryland:								
Baltimore	38	25	13	14	1	2	34	20
Cumberland	0	0	0		0	0	0	0
Frederick	0	0	1		0	0	0	1
District of Columbia:								
Washington	10	16	8	2	2	0	0	16
Virginia:								
Lynchburg	1	2	1		0	0	1	2
Richmond	0	6	7		1	0	0	3
Roanoke	1	2	0		0	0	0	2
West Virginia:								
Charleston	5	1	0		0	1	0	1
Huntington	0		4		0	0	0	0
Wheeling	2	1	0		0	0	0	1
North Carolina:								
Raleigh	0	1	1		0	3	0	1
Wilmington	3	1	0		0	0	0	0
Winston-Salem	8	1	0		0	0	0	3
South Carolina:								
Charleston	0	0	2	23	0	0	0	3
Columbia	0	0	0		0	0	0	0
Greenville	0		0		0	0	0	0
Georgia:								
Atlanta	4	6	13	8	1	0	1	8
Brunswick	0	0	0		1	1	0	0
Savannah	0	0	1	6	0	0	0	2
Florida:								
Miami	1	2	2		0	1	0	4
Tampa	0	1	2		0	0	0	0

City reports for week ended December 26, 1931—Continued

Division, State, and city	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
		Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL								
Kentucky:								
Covington	0	0	0	----	0	0	0	1
Lexington	1	----	2	----	0	0	0	3
Tennessee:								
Memphis	1	5	10	----	1	1	0	10
Nashville	0	2	0	----	1	1	0	3
Alabama:								
Birmingham	1	5	6	6	3	1	0	3
Mobile	1	1	1	----	0	0	0	1
Montgomery	0	1	2	----	----	0	2	----
WEST SOUTH CENTRAL								
Arkansas:								
Fort Smith	1	0	3	----	----	0	0	----
Little Rock	0	1	2	----	0	0	0	0
Louisiana:								
New Orleans	0	13	9	2	1	0	0	13
Shreveport	5	2	4	----	0	12	2	2
Oklahoma:								
Muskogee	0	----	6	2	0	0	0	0
Oklahoma City	0	2	4	4	1	0	0	1
Tulsa	0	4	0	----	----	0	0	----
Texas:								
Dallas	0	14	0	----	3	0	0	14
Fort Worth	3	5	8	----	0	0	0	4
Galveston	0	1	1	----	0	0	0	0
Houston	0	9	14	----	0	0	0	3
San Antonio	0	4	1	1	3	0	0	6
MOUNTAIN								
Montana:								
Billings	0	0	0	----	0	13	0	0
Great Falls	3	0	0	----	0	0	0	0
Helena	0	0	0	----	0	24	0	0
Missoula	0	1	0	----	0	0	0	0
Idaho:								
Boise	2	1	0	----	0	0	0	2
Colorado:								
Denver	16	8	3	----	8	2	2	18
Pueblo	11	0	0	----	0	0	0	0
New Mexico:								
Albuquerque	7	0	0	----	0	1	0	0
Arizona:								
Phoenix	0	0	0	----	0	0	0	3
Utah:								
Salt Lake City	40	3	0	----	0	0	1	4
Nevada:								
Reno	0	0	0	----	0	0	0	2
PACIFIC								
Washington:								
Seattle	21	4	0	----	----	105	5	----
Spokane	16	1	0	----	----	0	0	----
Tacoma	11	2	1	----	0	2	1	4
Oregon:								
Portland	14	9	1	----	0	3	6	5
Salem	1	0	0	3	0	0	0	2
California:								
Los Angeles	10	35	15	46	1	0	0	18
Sacramento	1	2	3	1	1	22	0	7
San Francisco	25	15	2	10	1	3	0	12

City reports for week ended December 26, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	3	2	0	0	0	1	0	0	0	0	23
New Hampshire:											
Concord	0	1	0	0	0	2	0	0	0	0	10
Nashua	0	0	0	0	0	0	0	0	0	0	----
Vermont:											
Barre	0	0	0	0	0	1	0	0	0	1	2
Massachusetts:											
Boston	71	85	0	0	0	11	1	0	1	20	174
Fall River	3	4	0	0	0	3	0	0	0	0	29
Springfield	8	7	0	0	0	1	0	0	0	1	35
Worcester	12	34	0	0	0	3	0	0	0	14	59
Rhode Island:											
Pawtucket	2	0	0	0	0	0	0	0	0	0	12
Providence	11	14	0	0	0	0	0	0	0	6	63
Connecticut:											
Bridgeport	9	4	0	6	0	1	0	0	0	3	31
Hartford	7	7	0	0	0	2	0	1	0	10	34
New Haven	4	4	0	0	0	1	0	0	0	0	39
MIDDLE ATLANTIC											
New York:											
Buffalo	24	35	0	0	0	4	0	0	0	26	124
New York	167	190	0	0	0	65	10	7	1	86	1,295
Rochester	11	34	0	0	0	4	0	0	0	2	70
Syracuse	11	12	0	0	0	0	0	0	0	41	43
New Jersey:											
Camden	7	13	0	0	0	0	0	0	0	3	31
Newark	18	10	0	0	0	4	1	0	0	34	87
Trenton	4	3	0	0	0	1	0	0	0	0	35
Pennsylvania:											
Philadelphia	79	109	0	0	0	33	2	2	1	114	478
Pittsburgh	38	53	0	0	0	7	1	0	0	14	149
Reading	2	0	0	0	0	0	0	0	0	8	42
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	18	36	1	0	0	8	1	0	0	5	110
Cleveland	37	38	0	0	0	12	1	2	0	84	194
Columbus	11	9	0	0	0	4	0	0	0	16	86
Toledo	13	3	0	0	0	2	1	0	0	36	84
Indiana:											
Fort Wayne	3	2	0	0	0	0	0	0	0	0	23
Indianapolis	10	2	5	0	0	3	0	0	0	11	----
South Bend	3	----	1	----	----	----	0	----	----	----	----
Terre Haute	3	1	----	0	0	0	0	0	0	2	21
Illinois:											
Chicago	118	128	1	6	0	40	3	1	0	84	600
Peoria	----	2	----	0	0	0	----	1	0	5	22
Springfield	2	1	0	0	0	1	0	0	0	2	18
Michigan:											
Detroit	94	111	1	0	0	20	1	1	0	80	261
Flint	11	10	1	0	0	0	0	0	0	1	12
Grand Rapids	11	3	0	0	0	0	0	0	0	4	26
Wisconsin:											
Kenosha	2	0	0	0	0	0	0	0	0	6	4
Madison	3	2	0	0	----	----	0	0	----	0	----
Milwaukee	27	32	0	0	0	3	0	0	0	60	88
Racine	5	0	0	0	0	0	0	0	0	0	11
Superior	2	0	0	0	0	0	0	0	0	0	6

City reports for week ended December 26, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL											
Minnesota:											
Duluth	10	3	0	0	0	0	0	0	0	2	18
Minneapolis	45	8	0	1	0	0	0	0	0	2	68
St. Paul	23	9	1	0	0	0	0	1	0	4	55
Iowa:											
Des Moines	8	2	1	0	----	----	0	0	----	0	33
Sioux City	1	1	1	0	----	----	0	0	----	2	----
Waterloo	2	1	1	0	----	----	0	0	----	7	----
Missouri:											
Kansas City	15	14	0	0	0	5	0	0	0	14	83
St. Joseph	2	3	0	0	0	4	0	0	0	1	20
St. Louis	37	20	0	0	0	11	2	1	0	56	202
North Dakota:											
Fargo	1	1	0	0	0	0	0	0	0	0	----
Grand Forks	1	0	0	0	----	----	0	0	----	0	----
South Dakota:											
Aberdeen	0	0	0	0	----	----	0	0	----	1	----
Nebraska:											
Omaha	6	3	2	0	0	0	0	0	2	0	40
Kansas:											
Topeka	2	0	0	0	0	0	0	0	0	4	20
Wichita	4	3	0	4	0	0	0	0	0	1	20
SOUTH ATLANTIC											
Delaware:											
Wilmington	2	1	0	0	0	1	0	1	0	0	22
Maryland:											
Baltimore	29	15	0	0	0	12	2	2	1	80	200
Cumberland	1	5	0	0	0	0	0	2	0	1	15
Frederick	0	2	0	0	0	0	0	0	0	0	3
District of Col.:											
Washington	22	8	0	0	0	5	1	1	1	10	141
Virginia:											
Lynchburg	1	0	0	0	0	0	0	0	0	5	8
Richmond	8	12	0	0	0	4	1	0	0	0	58
Roanoke	3	2	0	0	0	1	0	0	0	0	13
West Virginia:											
Charleston	2	0	0	0	0	0	0	0	0	3	[1]5
Huntington	----	1	----	0	0	0	----	0	0	0	----
Wheeling	2	1	0	0	0	0	0	1	0	3	15
North Carolina:											
Raleigh	0	1	0	0	0	1	0	0	0	0	14
Wilmington	1	0	0	0	0	1	0	0	0	5	11
Winston-Salem	1	1	0	0	0	0	0	0	0	2	15
South Carolina:											
Charleston	0	0	0	0	0	4	0	0	0	0	19
Columbia	1	0	0	0	0	0	0	0	0	0	----
Greenville	----	0	----	0	0	0	----	0	0	0	----
Georgia:											
Atlanta	5	4	0	0	0	1	0	0	0	0	61
Brunswick	0	0	0	0	0	0	0	0	0	0	6
Savannah	1	2	0	0	0	1	0	0	0	2	25
Florida:											
Miami	1	0	0	0	0	2	0	0	0	0	22
Tampa	1	0	0	0	0	3	0	0	0	0	24
EAST SOUTH CENTRAL											
Kentucky:											
Covington	3	5	0	0	0	1	0	0	0	1	19
Lexington	----	0	----	0	0	0	----	0	0	2	11
Tennessee:											
Memphis	7	4	0	0	0	7	1	0	0	7	70
Nashville	3	2	0	0	0	3	0	0	0	0	57
Alabama:											
Birmingham	5	10	1	0	0	3	0	1	0	0	60
Mobile	1	5	0	0	0	2	0	0	0	0	15
Montgomery	1	1	0	0	----	----	0	1	----	0	----

[1] 2 Non-residents.

City reports for week ended December 26, 1931—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	1	0	0	----	----	0	0	----	2	----
Little Rock	2	3	0	0	0	0	0	0	0	0	----
Louisiana:											
New Orleans	7	2	0	0	0	4	2	12	0	0	137
Shreveport	1	1	0	0	0	3	0	1	0	4	----
Oklahoma:											
Muskogee	----	1	----	0	0	----	----	0	0	0	----
Oklahoma City	2	6	0	0	0	3	0	0	0	0	34
Tulsa	3	4	0	0	----	----	1	0	----	0	----
Texas:											
Dallas	7	0	3	0	0	3	0	0	0	0	60
Fort Worth	3	10	0	3	0	0	0	0	0	0	30
Galveston	1	0	0	0	0	0	0	0	0	0	10
Houston	3	5	1	2	0	2	0	0	0	0	42
San Antonio	2	0	0	0	0	2	0	0	0	0	65
MOUNTAIN											
Montana:											
Billings	1	0	1	0	0	0	0	0	0	0	3
Great Falls	3	2	0	0	0	2	0	0	0	1	11
Helena	1	1	0	0	0	0	0	0	0	0	3
Missoula	1	0	0	0	0	0	0	0	0	0	6
Idaho:											
Boise	0	0	1	0	0	0	0	0	0	0	3
Colorado:											
Denver	14	9	0	0	0	3	0	0	0	2	89
Pueblo	1	0	0	0	0	1	0	0	0	0	10
New Mexico:											
Albuquerque	0	2	0	0	0	3	0	1	0	0	8
Arizona:											
Phoenix	1	0	0	0	0	1	----	0	0	0	----
Utah:											
Salt Lake City	2	1	0	0	0	0	0	0	0	0	32
Nevada:											
Reno	0	0	0	0	0	0	0	0	0	0	4
PACIFIC											
Washington:											
Seattle	8	5	1	3	----	----	0	0	----	2	----
Spokane	8	0	3	0	----	----	0	0	----	2	----
Tacoma	4	0	2	0	0	0	0	0	0	12	26
Oregon:											
Portland	7	3	5	1	0	0	0	1	0	0	63
Salem	1	0	0	0	0	0	----	0	0	3	17
California:											
Los Angeles	30	24	1	0	0	25	2	1	0	13	298
Sacramento	2	0	0	0	0	1	0	0	0	0	25
San Francisco	17	2	2	1	0	8	1	1	0	3	187

[*City reports for week ended December 26, 1931*—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	1	0	0	0	0	1	1	0	0
Worcester	0	1	0	0	0	0	0	0	0
Rhode Island:									
Providence	0	0	0	0	0	0	0	1	0
MIDDLE ATLANTIC									
New York:									
New York	3	2	1	1	0	0	1	5	3
Pennsylvania:									
Philadelphia	0	1	1	1	0	0	0	1	0
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	0	1	0	0	0	0	0	0	0
Cleveland	0	0	1	0	0	0	0	0	0
Indiana:									
Indianapolis	8	2	0	0	0	0	0	0	0
Illinois:									
Chicago	2	3	0	0	0	0	0	0	0
Michigan:									
Detroit	2	0	0	0	0	0	0	1	0
Wisconsin:									
Milwaukee	0	0	0	0	0	0	0	1	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	1	1	0	0	0	0	0	0	0
Missouri:									
St. Louis	3	1	0	0	0	0	0	0	0
Kansas:									
Topeka	0	0	0	0	0	1	0	0	
SOUTH ATLANTIC									
Maryland:									
Baltimore	0	0	0	1	0	0	0	0	0
South Carolina:									
Charleston	0	0	0	0	3	0	0	0	0
Georgia:									
Atlanta	1	1	0	0	1	1	0	0	0
Savannah [1]	0	0	0	0	2	0	0	0	0
Florida:									
Miami	0	0	0	0	0	1	0	0	0
EAST SOUTH CENTRAL									
Kentucky:									
Lexington	1	1	0	0	0	0	-------	0	0
Tennessee:									
Memphis	2	0	0	0	0	1	0	0	0
Nashville	1	0	0	0	0	0	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	1	1	0	0	1	1	0	0	0
Shreveport	0	0	0	0	0	3	0	0	0
Texas:									
Dallas	0	0	0	0	0	1	0	0	0
Fort Worth	0	0	0	0	0	3	0	0	0
Galveston	0	1	0	0	0	0	0	0	0
MOUNTAIN									
Colorado:									
Denver	1	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Spokane	0	0	0	0	0	0	0	1	0
Tacoma	1	1	0	0	0	0	0	0	0
California: [1]									
San Francisco	0	1	0	0	0	0	0	0	0

[1] Typhus fever, 2 cases; 1 case at Savannah, Ga.; and 1 case at Los Angeles, Calif.

The following table gives the rates per 100,000 population for 98 cities for the 5-week period ended December 26, 1931, compared with those for a like period ended December 27, 1930. The population figures used in computing the rates are estimated mid-year populations for 1930 and 1931, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 33,000,000. The 91 cities reporting deaths have more than 31,500,000 estimated population.

Summary of weekly reports from cities, November 22 to December 26, 1931—Annual rates per 100,000 population, compared with rates for the corresponding period of 1930.[1]

DIPHTHERIA CASE RATES

	Week ended—									
	Nov. 28, 1931	Nov. 29, 1930	Dec. 5, 1931	Dec. 6, 1930	Dec. 12, 1931	Dec. 13, 1930	Dec. 19, 1931	Dec. 20, 1930	Dec. 26, 1931	Dec. 27, 1930
98 cities	84	87	101	[2] 90	93	[2] 87	103	[2] 94	[2] 72	71
New England	67	87	58	121	70	128	84	143	65	75
Middle Atlantic	58	48	54	58	59	47	71	62	57	47
East North Central	71	122	94	112	86	120	104	116	[2] 70	102
West North Central	138	110	222	101	168	97	187	89	134	54
South Atlantic	144	66	164	112	118	122	118	108	99	86
East South Central	145	138	163	143	163	138	157	84	111	84
West South Central	206	153	244	[3] 147	287	[3] 132	189	[3] 202	115	143
Mountain	26	79	52	18	26	26	96	18	26	62
Pacific	67	95	88	65	61	55	82	83	41	40

MEASLES CASE RATES

98 cities	90	107	113	[2] 142	118	[2] 162	128	[2] 194	[2] 127	181
New England	315	162	481	220	656	273	637	271	945	808
Middle Atlantic	82	69	111	85	89	85	79	87	66	70
East North Central	15	28	31	28	28	26	60	28	[2] 32	27
West North Central	13	649	27	953	46	1,077	25	1,416	50	1,277
South Atlantic	28	44	43	62	22	80	26	138	14	124
East South Central	35	66	35	155	17	299	52	275	17	323
West South Central	24	10	27	[3] 11	17	[3] 11	44	[3] 18	41	24
Mountain	1,236	282	757	53	809	150	740	167	339	229
Pacific	123	10	180	26	210	26	294	6	259	16

SCARLET FEVER CASE RATES

98 cities	155	174	179	[2] 202	222	[2] 224	214	[2] 234	[2] 187	222
New England	262	264	293	268	397	259	438	351	389	353
Middle Atlantic	147	148	155	178	199	186	202	208	205	190
East North Central	169	221	229	257	281	315	264	306	[2] 229	285
West North Central	117	139	161	198	143	209	138	279	126	246
South Atlantic	176	188	172	230	176	260	201	208	107	178
East South Central	122	215	128	299	250	377	157	197	157	341
West South Central	95	132	108	[3] 92	142	[3] 84	101	[3] 73	41	59
Mountain	191	229	218	141	261	211	261	300	113	379
Pacific	108	83	100	97	153	71	94	83	61	85

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1931, and 1930, respectively.
[2] Shreveport, La., not included.
[3] South Bend, Ind., not included.

Summary of weekly reports from cities, November 22 to December 26, 1931—Annual rates per 100,000 population, compared with rates for the corresponding period of 1930—Continued

SMALLPOX CASE RATES

	Week ended—									
	Nov. 28, 1931	Nov. 29, 1930	Dec. 5, 1931	Dec. 6, 1930	Dec. 12, 1931	Dec. 13, 1930	Dec. 19, 1931	Dec. 10, 1930	Dec. 26, 1931	Dec. 27, 1930
98 cities	2	8	5	[2]7	4	[2]14	5	[2]9	[2]4	7
New England	0	0	55	0	7	0	55	0	14	0
Middle Atlantic	0	0	1	0	0	0	0	0	0	0
East North Central	0	4	0	1	2	3	4	6	[2]4	2
West North Central	11	68	4	48	13	122	4	48	10	43
South Atlantic	0	0	0	0	0	0	0	0	0	0
East South Central	6	0	0	0	0	0	0	0	0	0
West South Central	20	3	3	[2]4	17	[2]7	3	[2]15	7	17
Mountain	0	35	0	106	0	150	0	115	0	35
Pacific	6	8	10	10	10	6	2	10	8	20

TYPHOID FEVER CASE RATES

98 cities	7	10	7	[2]10	9	[2]8	5	[2]8	[2]6	7
New England	2	12	5	7	10	19	7	10	2	2
Middle Atlantic	4	3	5	8	6	6	5	3	4	3
East North Central	5	4	4	10	3	7	1	9	[2]2	12
West North Central	8	8	4	6	6	6	0	8	4	6
South Atlantic	34	32	16	18	32	4	10	12	14	16
East South Central	6	12	12	12	17	18	23	36	12	18
West South Central	7	70	27	[2]26	34	[2]22	34	[2]26	44	0
Mountain	0	9	26	9	0	0	0	9	0	9
Pacific	2	6	10	10	6	6	2	6	4	6

INFLUENZA DEATH RATES

91 cities	7	9	7	[2]9	8	[2]9	8	[2]10	[2]9	11
New England	0	2	2	5	5	5	5	2	7	2
Middle Atlantic	9	11	4	6	8	7	6	5	7	10
East North Central	5	7	6	8	3	5	6	10	[2]5	7
West North Central	3	0	6	12	6	21	6	15	3	9
South Atlantic	6	10	6	20	12	24	12	20	12	24
East South Central	13	26	38	13	25	26	6	32	32	19
West South Central	17	14	7	[2]34	7	[2]11	17	[2]23	24	32
Mountain	26	26	9	18	35	9	17	18	70	0
Pacific	7	7	19	2	14	7	14	10	7	17

PNEUMONIA DEATH RATES

91 cities	86	109	89	[2]99	98	[2]106	106	[2]111	[2]101	126
New England	99	77	91	73	67	119	111	116	94	119
Middle Atlantic	98	118	95	101	108	104	116	127	101	126
East North Central	52	78	56	77	66	86	63	69	[2]78	94
West North Central	106	93	88	132	112	150	103	96	118	117
South Atlantic	122	180	146	154	140	134	142	138	132	174
East South Central	107	136	95	155	113	123	120	110	113	140
West South Central	66	153	135	[2]128	104	[2]162	142	[2]135	131	189
Mountain	122	229	122	132	87	159	200	220	226	194
Pacific	74	70	77	60	130	60	122	127	89	135

[2] Shreveport, La., not included.
[2] South Bend, Ind., not included.

FOREIGN AND INSULAR

CANADA

Provinces—Communicable diseases—Week ended December 19, 1931.—The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended December 19, 1931, as follows:

Province	Influenza	Poliomyelitis	Smallpox	Typhoid fever
Prince Edward Island [1]				
Nova Scotia	5			1
New Brunswick [1]				
Quebec	1	6		9
Ontario		1		14
Manitoba				3
Saskatchewan			10	
Alberta			9	
British Columbia				2
Total	6	7	19	29

[1] No case of any disease included in the table was reported during the week.

Quebec Province—Communicable diseases—Week ended December 19, 1931.—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended December 19, 1931, as follows:

Disease	Cases	Disease	Cases
Chicken pox	107	Poliomyelitis	6
Diphtheria	51	Puerperal septicemia	1
Erysipelas	1	Rabies	1
German measles	4	Scarlet fever	70
Influenza	1	Tuberculosis	42
Measles	231	Typhoid fever	9
Mumps	32	Whooping cough	47

Ontario—Communicable diseases—Comparative—Four weeks ended November 28, 1931.—Certain communicable diseases were reported in the Province of Ontario, Canada, for the four weeks ended November 28, 1931, and the corresponding period of the year 1930, as follows:

Disease	1930		1931	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis	2	2	5	3
Chancroid	3			
Chicken pox	1,365		708	
Conjunctivitis			1	
Diphtheria	459	17	328	12
Dysentery		5	1	
Erysipelas	1		1	
German measles	31		9	
Gonorrhea	501		251	
Influenza	12		8	1
Jaundice			14	
Lethargic encephalitis	1		3	3
Measles	105		1,080	
Mumps	595		426	
Paratyphoid fever	5		5	
Pneumonia		153		120
Poliomyelitis	80	11	18	2
Puerperal septicemia			1	
Scarlet fever	621	1	411	1
Septic sore throat	6	1	41	3
Smallpox	62		13	
Syphilis	354		171	1
Tetanus		1		1
Tuberculosis	209	51	152	33
Tularaemia			2	1
Typhoid fever	73	8	101	3
Undulant fever	5		10	1
Whooping cough	370	1	596	

CHINA

Hong Kong—Diphtheria.—According to a recent report, diphtheria was epidemic in Hong Kong, China, in December, 1931, 99 cases with 3 deaths having been reported during the month. The majority of the cases reported were among adult Europeans. It is thought that the epidemic, which was said to be almost under control, may be of milk origin.

CZECHOSLOVAKIA

Communicable diseases—October, 1931.—During the month of October, 1931, certain communicable diseases were reported in the Republic of Czechoslovakia, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Anthrax	10		Puerperal fever	35	15
Cerebrospinal meningitis	13	5	Scarlet fever	2,201	34
Diphtheria	3,170	143	Trachoma	218	
Dysentery	59	10	Typhoid fever	627	45
Malaria	9		Typhus fever	18	1
Paratyphoid fever	16	2			

DENMARK

Communicable diseases—October, 1931.—During the month of October, 1931, cases of certain communicable diseases were reported in Denmark as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	7	Paratyphoid fever	113
Chicken pox	6	Poliomyelitis	3
Diphtheria and croup	327	Puerperal fever	23
Erysipelas	318	Scabies	887
German measles	2	Scarlet fever	188
Gonorrhea	949	Syphilis	98
Influenza	5,480	Tetanus	5
Lethargic encephalitis	3	Typhoid fever	6
Measles	1,553	Undulant fever (Bac. abort. Bang)	49
Mumps	122	Whooping cough	2,308

TRINIDAD

Port of Spain—Vital statistics—November, 1930, 1931.—The following statistics for the months of November, 1930 and 1931, are taken from a report issued by the public health department of Port of Spain, Trinidad:

	1930	1931		1930	1931
Number of births	190	169	Death rate per 1,000 population	16.4	16.1
Birth rate per 1,000 population	34.3	29.3	Deaths under 1 year	22	15
Number of deaths	91	93	Deaths under 1 year per 1,000 births	115.8	88.8

UNION OF SOUTH AFRICA

Vital statistics—1930.—According to the annual report of the Department of Public Health of the Union of South Africa for the fiscal year ended June 30, 1931, the birth, death, and infant mortality rates, and the death rates from certain types of diseases in the Union during the year 1930 were as follows:

Death rate per 1,000 population	9.68
Birth rate per 1,000 population	26.43
Infant mortality rate per 1,000 live births	66.81
Death rate per 100,000 population from—	
Cancer	82.62
Diseases of heart and circulatory system	132.33
Pneumonia and bronchitis	112.87
Tuberculosis (all forms)	46.76

Diseases reported during year ended June 30, 1931.—During the year ended June 30, 1931, cases of certain diseases were reported in the Union of South Africa as follows:

Disease	Cases	Disease	Cases
Anthrax	29	Poliomyelitis	25
Cerebrospinal meningitis	404	Puerperal fever and sepsis	309
Diphtheria	1,629	Rabies	3
Erysipelas	305	Scarlet fever	1,464
Gonorrheal ophthalmia	60	Smallpox	31
Lead poisoning	7	Trachoma	25
Leprosy	77	Tuberculosis	6,148
Lethargic encephalitis	16	Typhoid fever	4,793
Ophthalmia neonatorum	386	Typhus fever	1,541
Plague	71	Undulant fever	3

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Hygiene, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

[C indicates cases; D, deaths; P, present]

Place		June 28–July 25, 1931	July 26–Aug. 22, 1931	Aug. 23–Sept. 19, 1931	Week ended— Sept. 26, 1931	October, 1931					November, 1931				December, 1931				Jan. 2, 1932
						3	10	17	24	31	7	14	21	28	5	12	19	26	
Ceylon: Colombo	C		3											1	1	1			
	D		3											1	1	1			
China:																			
Canton	C			2											3				
Hankow	C						8		5	18			6	5	3				
	D						6			1			4	1	1				
Shanghai	C	1	7	125	35	29	17	17	8										
	D			9	5	8			4										
Swatow	C	7																	
India	C	22,074	36,514	39,223	7,552	10,172	4,556	4,425	4,237										
	D	12,003	20,276	21,683	3,716	4,808	2,450	2,283	2,252										
Bombay	C	23	44	42	1	1	2		4	1			1	3					1
	D	16	25	17		1	2			1			1	4	1				
Calcutta	C	237	110	46	18	23	3	7	14	13	19	28	22	19	11	22	11		
	D	155	30	15	6	12		5	9	4	10	14	10	11	6	15	6		
Chittagong	C							1											
Karikal	C		1	2	1														
	D		1	2															
Madras	C	4	6	5															
Moulmein	C	1																	
	D	1																	
Negapatam	C			1															
Rangoon	C	4	1		1				1										
	D	1	1		1				1										
India (French):																			
Chandernagor	C	5	7	2	1				1										
	D	1	7	2	1				1										
Pondicherry	C	3	3	4		1													
	D	3	2	2															
India (Portuguese)	C	2	2	34		17	19	39	18	20									
	D	1	2	18		10	4	12	3	6									

Indo-China (see also table below):																			
Cochin-China—Rachgia	C		P																
Pnompenh	C	5	2	2		1				2	2								
	D	2	1	2		1													
Saigon and Cholon	C	14					1										P	1	
	D	7					1												
Iraq:																			
Abulkhasib	C			6															
	D			5															
Amara	C	2		66			2	2	2			3	3				2	P	
	D	1		59				1	1			2	4				2		
Amara Province	C			96	32	21	15	27	13	7	15			3					
	D			120	29	24	14	17	10	6	8			2					
Basra	C	547		293	77	19	29	32	38	30	9	1							
	D	287		154	34	11	13	26	7	18	10	1							
Basra Province	C	5		53	26	14	1	1	3	7									
	D	2		30	9	8	1	1	1	4									
Dinwaniyah	C				1														
Dinwaniyah Province	C				15	8	14	24	22	1									
	D				11	6	5	22	10	5									
Iwaniyah	C				22														
	D				15														
Kut Province	C									17	3								
	D									12	2								
Muntafiq Province	C			225	55	54	45	55	17	19	9	23	1	1					
	D			145	38	57	28	37	10	18	6	17	3						
Nasiriyah	C			88	4	4	18	7	4	7	6	7	2	6					
	D			75	3	4	18	3	3	6	3	6		7					
Suqelshuyukh	C			2															
	D			2															
Japan: Taiwan—Kelung	C										2								
Persia:[1]																			
Abadan	C							1		3			1						
Ahwaz	C							12		84	16	3		9	37	1			
	D							7		69	21	8		7	31	1			
Khorramabad	C												18	16	80	45	2		
Mohammerah	C												10	10	65	30	9		
Philippine Islands:[2]								1											
Provinces—																			
Capiz	C			35	49	21	5	4		7	5			4	16	7	13	4	4
	D			16	35	16	5	3		5	4			4	10	5	10	3	3
Cebu	C		5																
	D		3																
Iloilo	C	27																	
	D	25																	

[1] On Oct. 23, 1931, cholera was reported at Mohammerah, Abadan, and Ahwaz, Persia. During the period from Oct. 22 to Nov. 7, 1931, 141 cases and 97 deaths were reported.
[2] Figures for cholera in the Philippine Islands are subject to correction.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

Place		June 28–July 25, 1931	July 26–Aug. 22, 1931	Aug. 23–Sept. 19, 1931	Week ended— Sept. 26, 1931	October, 1931					November, 1931				December, 1931				Jan. 2, 1932
						3	10	17	24	31	7	14	21	28	5	12	19	26	
Siam	C	3	1	1															
	D	1		1															
Ayudhaya Province	C															1			
	D															1			
Bangkok	C	4	1	1															
	D	2																	
On vessel:																			
S. S. Bandar Shalpour, at Bushire, Persia, from Basra	C	1																	
	D	1																	
S. S. Kohistan, at Basra, from Bushire, Persia	C	2																	
S. S. Cathay, at Kobe, Japan, from Shanghai	C		4																
	D		1																
S. S. Kasagi Maru, at Moji, from Shanghai	C			1															
S. S. Ankoo, at Nagasaki, from Shangahi	C			2															
	D			1															

Place		June, 1931	July, 1931	August, 1931	September, 1931			October, 1931			November, 1931			Dec. 1–10, 1931
					1–10	11–20	21–30	1–10	11–20	21–31	1–10	11–20	21–30	
Indo-China (French) (see also table above):														
Cambodia [1]	C	308	241	12		8	6	1	16	2	3		1	
	D	109	60	2		4	3	1	16	1				
Cochin-China [1]	C	140	143	39		9	9	11	2	1	5		1	8
	D	106	42	32		6	7	10	2	1	4			5

[1] Reports incomplete.

PLAGUE

Place		June 28–July 25, 1931	July 26–Aug. 22, 1931	Aug. 23–Sept. 19, 1931	Week ended— Sept. 26, 1931	October, 1931					November, 1931				December, 1931			
						3	10	17	24	31	7	14	21	28	5	12	19	26
Algeria:																		
Algiers	C		2															
Phillippeville	C	1	2															
	D	1	1															
Argentina: San Juan Province	C	P																
Azores:																		
San Miguel Island	C													2	3			
	D														1			
Terceira Island	C													9	7			
	D													4	2			
British East Africa (see also table below):																		
Tanganyika	C	6	8	4	8	2		3										
	D	6	2	4	4			1										
Uganda	C	418	285	289	53	62	67	64	71		87							
	D	400	281	207	82	63	67	58	69		84							
Ceylon: Colombo	C	1	6	3	1	1	2							1				
	D	1	6	3	1	1	1							1				
Plague-infected rats			8												1			
Chile: Santiago	C							1										
	D							1										
China: [1]																		
Shansi Province [2]	C									P								
Shensi Province	C									P								
Dutch East Indies:																		
Batavia and West Java	C	75	58	65	21	31		29	28	34	38	39	44					
	D	75	58	65	21	31		29	28	34	38	39	44					
Java and Madura	D	212	205	233	77	69	85	94	97	133	132	150						
Ecuador (see table below).																		
Egypt:																		
Alexandria	C	13	9	5	1				1	1	3	1		1	1	1		
	D	5	3	2							1	1	1	1	1			
Assiout	C															1	1	1
	D																1	1
Beheira	C			2														
Dakahlia	C	1	2															

[1] On July 27, 1931, 1,250 cases of plague were reported in Chiobe and Changchow, China, since April. On Sept. 19, 1931, 18 deaths were reported in Changchuanpu and new cases in Kaitung and Fengtien.

[2] On Oct. 17, 1931, plague epidemic was reported in western Shansi Province, China, with 2,000 deaths at Hsinghsien.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D deaths; P present]

Place		June 28–July 25, 1931	July 26–Aug. 22, 1931	Aug. 23–Sept. 19, 1931	Week ended— Sept. 26, 1931	October, 1931					November, 1931				December, 1931			
						3	10	17	24	31	7	14	21	28	5	12	19	26
Egypt:—continued.																		
Girga	C	1													1		1	
Kena	C												2			2		
	D												1			2		
Minieh	C	12									1	3			1	1	1	
	D	4									1	1					1	
Port Said	C	5	2						1			1	2		2			1
	D	1											2					1
Tanta	C		2	2									2					
	D												2					
France: Rouen—Devilleles	C									P								
Hawaii Territory:																		
Hawaii—Hamakua—Plague-infected rats			1															
Maui Island—																		
Haliimaile—Plague-infected rats				1														
Kula District	C		1															
	D		1															
Makawao—Plague-infected rats				1														
Paia—Plague-infected rats					1													
Paaulo—Plague-infected rats										1								
India	C	221	684	1,832	723	527	600	700	619									
	D	128	440	772	355	222	263	307	304									
Bassein	C	4	2	4	1				1									
	D	3	2	4	1				1									
Bombay	C	12					1		1					1				
	D	6					1							1				
Plague-infected rats		48	47	57	9	9	12	12	4		11	7	11	13	16	16	17	
Burma	C	16																
	D	10																
Madras Presidency	C	21		376		62	30	90		23	49	19		31				
	D	9		162		16	30	59		16	17	7		10				
Moulmein	C	9		5														
	D	1		9	2													
Rangoon	C	2	1	3					5				1					
	D	1	1	2					1				1					1
Plague-infected rats		6	3	4	1	1	1	1	1						1	1		1

Iraq:																		
Baghdad	C	3	1	3						1		1	1	2	1	3	1	
	D	2		1									1		1			
Maudhan	C										2	1	1	1				
	D										1		1					
Madagascar (see also table below): Tamatave	C		1	2	1													
Morocco	C				10			8		2					11			
	D							8	2	4								
Peru (see table below).																		
Senegal (see table below).																		
Siam	C		1	4	1	1	1	1	1		4		1				1	
	D			3	1	1		1	1		1						1	
Spain: Hospitalet—Barcelona Province	C		5	2	1	1			5		1	1						
	D		2	1		1			1									
Syria: Beirut	C	2	1	2	1	2					1							
Tunisia: Tunis	C			1			1											
Union of South Africa:																		
Cape Province—Plague-infected rats			1															
Orange Free State	C			P				P										

Place		June, 1931	July, 1931	August, 1931	September, 1931	October, 1931	November, 1931
British East Africa (see also table above):							
Kenya	C	154	484	235	14	64	
Ecuador:							
Alamor Parish—Los Hoyos	C				1	3	
Amalura Parish—Cangochapa	C					2	
Calvas Canton—							
Cariamanga	C				4	1	
Overjeria	C		1				
Celicia Canton—Choras	C					1	
Loja Canton—							
Lapaz	C				20		
Naimuro	C					2	
Paterillo	C		1				
Tuburo	C					7	
Palas Canton—San Antonio	C				1	1	
Indo-China	C	2	1		1	3	
	D	2	1		1	1	
Madagascar (see also table above):							
Ambositra Province	C	15	1	2	1	1	
	D	15	1	1	1		
Antisirabe Province	C	12	13	22	19	10	
	D	12	12	22	19	10	
Miarinarivo Province	C		8	20	14	4	
	D		7	19	12	4	
Madagascar—Continued.							
Moramanga Province	C	1	1	3	12	6	
	D			3	11	4	
Tananarive Province	C	10	5	45	65	63	
	D	9	5	44	63	62	
Peru	C	5	3	19	2		
	D	1	2	14	2		
Callao—Plague-infected rats				1			
Senegal:							
Baol [1]	C		27	101	13	6	2
	D		13	58	8	2	
Dakar [1]	C	64	95	194	45	4	
	D	56	73	106	31	4	
Diourbel [1]	C				13		10
	D				5		5
Louga [1]	C	4	3	2	10	1	19
	D	2	1	1	4	2	10
Rufisque [1]	C	2	34	2	1	7	12
	D					1	2
Thies [1]	C	12	16	26	12	7	16
	D	3	7	16	8	5	7
Tivaouane [1]	C	3	3				
	D	2	2				

[1] Reports incomplete.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX

[C indicates cases; D, deaths; P, present]

Place		June 28–July 25, 1931	July 26–Aug. 22, 1931	Aug. 23–Sept. 19, 1931	Week ended— Sept. 26, 1931	October, 1931					November, 1931				December, 1931			
						3	10	17	24	31	7	14	21	28	5	12	19	26
Algeria:																		
Algiers	C	1									1							
Constantine	C	1		1														
Brazil: Porto Alegre (alastrim)	C	41	34	48	12	18		16	7	24	3	23	9					
	D	1	1	4		2				3								
British East Africa: Tanganyika	C	149	19	50	8	2	1, 121	53		18								
	D	17		5	4		91	2		2								
British South Africa:																		
Northern Rhodesia	C	21	26				1											
Southern Rhodesia	C	2		3														
Canada:																		
Alberta	C	1	1		12				1	2	2	1		2	1		9	
British Columbia	C	2	5	2							1	1						
Manitoba	C			1									1	1				
Winnipeg	C			1														
Nova Scotia	C													1				
Ontario	C	35	5	6	5	2	1	9		7	3	5	3	2	5	1	10	
Kingston	C			1														
Ottawa	C			1	5	2		1		4	3	5						
Toronto	C													1				
Quebec	C	1																
Saskatchewan	C	42	26	33	1	6	3	1	11	3	1	18	12	5	9	8		
Regina	C				1			1										
Chile:																		
Antofagasta	C	1																
Santiago	C								2									
	D								1									
China:																		
Amoy	C	2	1	1	1			1	1		1	6	2	5	11	28	60	
	D	2	1	1	1				1		1	4		4	7	25	22	
Canton	C	2		1							1	1	6	3	2	3	6	
Foochow	C	P	P	P		P		P		P		P		P				
Hankow	C	3	3		1					5	4	9	5	8	11			
	D													4				
Manchuria—Dairen	C													1				
Nanking																		

Nanking	C		1															
Shanghai—																		
Foreigners only	C	3		35	29	17	17	1	6	2	12	16	13	20	23	16		
Including natives	D	6	1	7	8					1	1		6	8	7	8		
Tientsin	C	3																
Chosen (see table below).																		
Colombia: Santa Marta	D			1														
Eritrea	C	2		10														
	D			2														
France (see table below).																		
Great Britain:																		
England and Wales	C	187	91	97	45	41	34	41	39	42	71	68	55	56	57	48	44	
London	C	54	26	32	5	17	15	21	20	27	55	27	38	27	35	18	18	
London and Great Towns	C	152	69	88	35	31	25	37	31	37	66	45	48	48	53	42	31	
	D	1																
Sheffield	C			2														
Greece (see table below).																		
Honduras:																		
Puerto Castilla	C					1						1					1	
Tegucigalpa	C																	
India	C	5,359	2,927	1,705	382	528	258	283	197	270	378			8				
	D	1,352	746	433	100	122	47	55	46	66	63							
Bombay	C	6	2	5									1				2	
	D	6	1	1									1				1	
Calcutta	C	21	13	5	1				1						1			
	D	18	9	5	1				1						1			
Cochin	C		3		1	1	2	4	3		2							
Karachi	C		1						1						4	1	2	
Madras	C	2	1	1	1	5	6	1	2	2		1		2	2	3	1	
	D						2							1		1		
Negapatam	C	1	2	4		1		1				1				1		
Rangoon	C	3	4	2		2		1	1		1		2	2	2	3	4	
	D	1	2	1		1	1				1		2	2	1	2	1	
Tuticorin	C			2		4			1		4			4	4			
	D					1			1									
Vizagapatam	C	5	5	6	2	4			1									
	D	1	4	6		1			1									
India (French):																		
Chandernagor	C	3																
	D	2																
Karikal	C	4	7	7		5		3			3	1	1					
	D	4	6	3		1		3			3		1					
Pondicherry Province	C	28	20	26	1	4	14	4	9	18	5	6	9	6				
	D	28	20	24	1	4	12	4	9	16	5	6	9	5				
Indo-China (see also table below): Saigon and Cholon	C	3	2	6	1	4	1			4	2	1	4	6	7	9	13	
	D	1	1	3	1	2				4	1		2	1	3	6	9	
Iraq:																		
Baghdad	C			1										1	4	6	3	4
	D													1	2	2	1	2
Mosul Liwa	C	1	1		5													
Ivory Coast (see table below).																		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		June 28–July 25, 1931	July 26–Aug. 22, 1931	Aug. 23–Sept. 19, 1931	Week ended— Sept. 26, 1931	October, 1931 3	10	17	24	31	November, 1931 7	14	21	28	December, 1931 5	12	19	26
Jamaica	C														1			
Japan: Yokohama	C													1				
Mexico (see also table below):																		
Jalisco (State)—Guadalajara	D	3	2		1	1	2				2		1				1	
Mexico City and surrounding territory	C	22	10	5	2	1	2	2	1	1	1	2	3	4				
	D	8	2	2	1	2		1	1									
Monterrey	C									2								
Torreon	C			2		1								1	5	1		
	D			1														
Morocco (see table below).																		
Netherlands: Friesland—Opsterland	C								[1]1									
Nigeria	C				136	318				8								
	D				39	102												
Panama: Chiriqui	C														3			
Poland	C	18		1						1		1				1	1	
Portugal: Lisbon	C	45	37	66	16	11	6	15	19	16	17	26	22	23	21	25	35	
Rumania (see table below).																		
Siam	C	1		3														
	D	1																
Spain	C	7																
Straits Settlements	C		1															
Sudan (Anglo-Egyptian)	C			32									2					
	D			6														
Syria (see table below).																		
Turkey (see table below).																		
Union of Socialist Soviet Republics (see table below).																		
Union of South Africa:																		
Cape Province	C										P		P					
Natal	C		P	P														
Orange Free State	C	P	P	P	P	P	P											
Transvaal	C	P							P	P	P		P					
Upper Volta	C																	
On vessel:																		
S. S. Taif (pilgrim ship) at Suakin from Jeddah	C				2													

Place		May, 1931	June, 1931	July, 1931	August, 1931			September, 1931			October, 1931			November, 1931			Dec. 1-10, 1931
					1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-30	
Upper Volta	C		2														
On vessel:																	
S. S. Taif (pilgrim ship) at Suakin from Jeddah	C			1													
Indo-China (see also table above)	C	58	47	8	29	13	30	5	7	27	10	11	26	20	2	98	144
	D			4	11	6	9		4	8	3	3	10	4		18	17
Ivory Coast	C						7							1			
	D						4							1			
Syria: Beirut	C		1														

Place		April, 1931	May, 1931	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931
China: Harbin	C		13	10				
Chosen	C		1	4	2			
	D				1			
France	C	6	54	9	20		4	
Greece	C		3	1				
Mexico (see also table above)	D	1	1	2				
Morocco	C	7	49	48	23	23	59	91
Rumania	C		1			1		
Turkey	C		9	1				
Union of Socialist Soviet Republics	C	1,516	1,345					

[1] Imported case.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER

[C indicates cases; D, deaths; P, present]

Place		May 31–June 27, 1931	June 28–July 25, 1931	July 26–Aug. 22, 1931	Aug. 23–Sept. 19, 1931	Week ended— Sept. 26, 1931	October, 1931					November, 1931				December, 1931			
							3	10	17	24	31	7	14	21	28	5	12	19	26
Algeria:																			
Algiers	C	9	2						1		1	1							
Bone	C			2															
Constantine Department	C	26	3	1	2		1				11	16	11	1		1	1		
Oran	C	2		1	1								1	1					
Bulgaria	C	30			1					1			1		2				
	D	6																	
Chile:																			
Antofagasta	C										1								
Santiago	C									3									
China:																			
Manchuria—Harbin	C	16			1														
Shanghai	C		3	1		1													
Chosen (see table below).																			
Colombia: Cali	D				1														
Czechoslovakia (see table below).																			
Egypt:																			
Alexandria	C	3			2													3	
Beheira	C											1							
Cairo	C				1												1		
Gharbieh	C													1					
	D													1					
Greece (see table below).																			
Guatemala (see table below).																			
Irish Free State:																			
Cork County—																			
Schull	C		1																
Skibbereen	C	2	1																
Donegal County—																			
Stranorlar	C																2		
Kerry County—Listowel	C	1																	
Limerick County—																			
Croom	C																		

Limerick County—																			
Croom	C					1													
Glin	C				2	1													
Limerick	C		2	1													1		
Michelstown	C		1																
Rathkeale	C					1													
Mayo County—																			
Castlebar	C			1															
Westport	C			1															
Japan	C	1																	
Lithuania (see table below).																			
Mexico:																			
Durango	D		1																
Guadalajara	D			1															
Mexico City, including municipalities in Federal District	C	46	53	18	10	4	2	5	3	7	3	1	5	7	3				
	D	19	12	10	4	2	2	2	2	2	2			1	1				
San Luis Potosi	D		4	1															
Torreon	C		1					1	1		3								
	D		1					1	1		5	1							
Morocco	C	101	102	8			1		3		1					11	6		
	D	6	8														2		
Palestine	C	5	2	11	4	4	1	1		2		1			1			2	1
Paraguay: Asuncion	D				1														
Peru.[1]																			
Poland	C	97	53	31	11	2	8	3	1	2	6	6	6		36	32	22		
	D	4	5	2			1				1	2			2		6		
Portugal: Oporto	C										3								
Rumania	C	80	11	23	13	1	6	7	4	12	12	6	8	13	13				
	D	13	5	2	1			2	1	3	3	2	1	1	1				
Tunisia: Tunis	C	73	2		3								3		26				
	D	4													2				
Turkey (see table below).																			
Union of Socialist Soviet Republics (see table below).																			
Union of South Africa:																			
Cape Province	C	P	P	P	P	P	P	P	P	P	P	P	P						
Municipality of East London	C	1			P														
Natal	C	P	P	P	1				P			P							
Orange Free State	C	P	12						P	P	P	P							
Transvaal	C	P	P	P	P	P	P	1	P	P	P	P	P	P					
Yugoslavia (see table below).																			

[1] Typhus fever has been reported in Peru from May to November, 1931, 153 new cases being reported during the months of October and November. The disease has not spread to the coastal regions.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER—Continued

[C indicates cases; D, deaths; P present]

Place		April, 1931	May, 1931	June, 1931	July, 1931	August, 1931	September, 1931	October, 1931
Chosen: Seoul	C	4	------	6	1	------	------	------
	D	1	------	1	1	------	------	------
Czechoslovakia	C	5	11	2	------	------	------	18
Greece	C	22	6	9	2	13	9	12
	D	3	------	------	------	2	1	------
Guatemala	C	------	------	33	34	3	------	------
	D	------	------	15	5	------	------	------
Lithuania	C	34	10	13	8	2	------	5
	D	5	------	2	------	------	------	1
Turkey	C	32	13	11	9	------	16	1
Union of Socialist Soviet Republics	C	1,513	1,324	------	------	------	------	------
Yugoslavia	C	43	14	2	3	1	------	------
	D	5	------	------	------	------	------	------

YELLOW FEVER

Place		May 31–June 27, 1931	June 28–July 25, 1931	July 26–Aug. 22, 1931	Aug. 23–Sept. 19, 1931	Week ended— Sept. 26, 1931	October, 1931: 3	10	17	24	31	November, 1931: 7	14	21	28	December, 1931: 5	12
Brazil:																	
Alagoas State	C	------	------	3	------	------	------	------	------	------	------	------	------	------	------	------	------
	D	------	------	2	------	------	------	------	------	------	------	------	------	------	------	------	------
Maceio	D	------	------	------	------	------	------	------	------	------	------	1	------	------	------	------	------
Utinga	C	------	------	------	------	------	------	------	------	------	------	3	------	------	------	------	------
	D	------	------	------	------	------	------	------	------	------	------	2	------	------	------	------	------
Ceara State	C	1	------	1	------	------	------	------	------	------	------	------	------	------	------	------	------
	D	------	------	1	------	------	------	------	------	------	------	------	------	------	------	------	------
Sobral	C	------	------	------	------	------	------	------	------	------	1	------	------	------	------	------	------
	D	------	------	------	------	------	------	------	------	------	1	------	------	------	------	------	------
Pernambuco State	C	------	------	------	2	------	------	------	------	------	------	------	------	------	------	------	------
	D	------	------	------	2	------	------	------	------	------	------	------	------	------	------	------	------
Pau d'Alho	C	------	------	------	------	------	------	------	------	------	------	------	1	------	------	------	------
	D	------	------	------	------	------	------	------	------	------	------	------	1	------	------	------	------
Recife	C	------	------	------	------	1	------	------	------	------	------	------	------	------	------	------	------
	D	------	------	------	------	1	------	------	------	------	------	------	------	------	------	------	------
Sergipe State	C	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
British Cameroons: Mamfe	C	2	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

British Cameroons: Mamfe	C	2															
Colombia: Magdalena Province—Near Cienaga	C		4														
Gold Coast:																	
Akuse	C		2														
	D		1														
Dagomba District	C			4													
Kete Krachi	C								1								
Kintampo	C		1														
	D		1														
Oda	C				1												
	D				1												
Salaga	C															1	
	D															1	
Tamale	C		2			2				1					2	1	
	D		2			2											
Wale Wale	C			1													
	D			1													
Ivory Coast:																	
Bobo Dioulasso	C		1														
	D		1														
Grand Bassam	C			4	1												
	D			2	1												
Kong Circle	C		4														
Seguela	C			P													
Tehini	C												1				
Nigeria	C			1						1		1		1			
	D			1								1		1			
Senegal:																	
Podor (Hinterland)	C			1													
	D			1													
St. Louis	C					1											
Thies	C					1											
	D					1											
Sudan (French)	C		4														
Macina—Kayo Circle	C											2					
	D											2					
Togo (French): Atakpame—Anie Circle	C												1				1
	D												1				
Upper Volta:																	
Banfora	C		2			2											
	D		1			1											
Dedougou	C										2						
Diarabakoko	C					2											
	D					1											
Ouagadougou	C				1	1			1								

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